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THE DUBLIN
QUARTERLY JOURNAL
OF
MEDICAL SCIENCE.

THE DUBLIN
QUARTERLY JOURNAL

OF

MEDICAL SCIENCE;

CONSISTING OF

ORIGINAL COMMUNICATIONS,

REVIEWS, RETROSPECTS, AND REPORTS,

INCLUDING THE

LATEST DISCOVERIES IN MEDICINE, SURGERY, AND THE COLLATERAL SCIENCES.

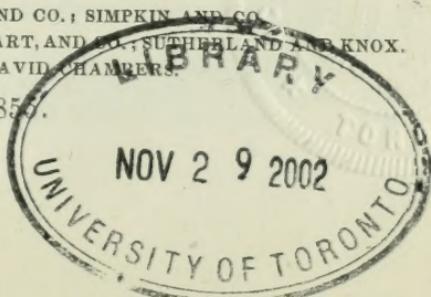
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On the Mode of Communication of Cholera. By John Snow, M. D.

The Nature of Cholera Investigated; with a Supplemental Chapter on Treatment, addressed to Junior Practitioners. By John George French, F. R. C. S.

Asiatic Cholera; its Symptoms, Pathology, and Treatment. By Richard Barwell, F. R. C. S.

A Pathological and Practical Treatise on Epidemic Cholera: its History, Causes, Various Forms, and Treatment. By O'B. Mahony, L. F. P. & S., L. S. A.

Statistics of Cholera. By Assistant Surgeon Edward Balfour, of the Madras Army.

Appendix (C.) to the Report of the General Board of Health on the Epidemic Cholera of 1848 and 1849. Presented to both Houses of Parliament by Command of Her Majesty.

Report of the Commissioners of Health, Ireland, on the Epidemics of 1846 to 1850. Presented to both Houses of Parliament by Command of Her Majesty.

Report of Sir William Burnett on the Cholera which attacked the Fleet in the Black Sea, in August, 1854, more particularly as relates to Her Majesty's Ships "Britannia," "Albion," and "Trafalgar." Printed by Order of the Right Hon. the Lords Commissioners of the Admiralty.

A Letter to the President and Fellows of the Royal College of Physicians, in relation to the evidence cited in their late Report on the Treatment of Epidemic Cholera. By Joseph Ayre, M. D., &c.

Thoughts on Cholera. By Edwin Hearne, M. B., &c.

Result of an Inquiry into the Invariable Existence of Premonitory Diarrhoea in Cholera, in a Series of Communications to the Registrar-General. By David Mac Loughlin, M. D.

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On the Use of Vegetable and Mineral Acids in the Treatment Preventative and Remedial of Cholera, and other Epidemic Disorders of the Bowels. By J. H. Tucker, Surgeon, &c.

Practical Observations on the History, Nature, and Treatment of Cholera Asphyxia. By John Coghlan, M. D., &c.

Statistical Reports of the Belfast Union Hospital, for the Treatment of Contagious Diseases. By Seaton Reid, M.D., &c.

The Piratical Specific. A New and Infallible Mode of Treatment for the Asiatic Cholera. By Dr. F. Wilson of Mauritius.

Notes on the Pathology and Treatment of Cholera. By John Rose Cormack, M. D.

Experiments on the Communicability of Cholera to the Lower Animals. By W. Lauder Lindsay, M. D. (From the Edinburgh Medical and Surgical Journal.)

Cholera: An Analysis of its Epidemic, Endemic, and Contagious Character; with Original and Peculiar Views of its Mode of Propagation, and the Means of Counteracting it. Showing also by Analogy that the Means of Preserving Organized Bodies from Decay point to the only true Curative Principles in the Treatment of Fevers generally, and more especially Cholera. By H. Stephens, M. R. C. S. L.

Practical Remarks on the Treatment of Malignant Cholera. By Charles Y. Haines, M. D.

Handbook for the Management of Cholera till Medical Aid can be procured. By William Kingsley, M. D.

2. Quarante Années de Pratique Chirurgicale. Par Ph.-J. Roux, Chirurgien de l'Hotel Dieu, &c. Tome I. Chirurgie Réparatrice,

3. On Pain after Food: its Causes and Treatment. By Edward Ballard, M. D., &c.,

4. Pathological and Surgical Observations, including a short Course of Lectures delivered at the Lock Hospital, and an Essay on the Surgical Treatment of Hemorrhoidal Tumours. By Henry Lee, F. R. C. S., Surgeon to the Lock Hospital, &c.,

5. Mikroskopische Anatomie, oder Gewebelehre des Menschen, von Dr. A. Kölliker, Professor der Anatomie und Physiologie in Würzburg. Zweiter Band: Specielle Gewebelehre. Zweite Hälfte. 2. Abtheilung (Schluss). Von den Harnund Geschlechtsorganen, vom Gefäßsystem und den höhern Sinnesorganen. Mit 140 Holzschnitten, ausgeführt von J. G. Flegel, .

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BOOKS RECEIVED.

1. On Pain after Food: its Causes and Treatment. By Edward Ballard, M. D., &c. London: Walton and Maberly, 1854. Royal 12mo. pp. 136.
2. Lectures on the Physical Diagnosis of the Diseases of the Lungs and Heart. By Herbert Davies, M. D., &c. Second Edition. Revised and enlarged. London: Churchill, 1854. Royal 12mo. pp. 364.
[This New Edition of Dr. Davies' useful and carefully written Manual is considerably improved, the chief addition being an admirable resume of the Morbid Anatomy and corresponding Physical Signs of the Diseases of the Lungs. We strongly recommend the Volume as a Handbook of Auscultation for the advanced Student and Junior Practitioner.]
3. Principles of Comparative Physiology. By William B. Carpenter, M. D., F. R. S., &c. With 300 wood engravings. Fourth Edition. London: Churchill, 1854. 8vo. pp. 770.
[By dividing the subjects contained in the Third Edition of his "General and Comparative Physiology," under the two heads of the title, Dr. Carpenter has been enabled to reproduce the latter in the Volume now before us, completed in every page to the present advanced state of the science, without rendering the work too bulky. He promises shortly to publish in a New Edition "General Physiology" also, as a companion Volume to this.]
4. On the Relative Merit of the Two Operations for Stone. Two Lectures delivered at the Royal College of Surgeons of England, May, 1854. By F. C. Skey, F. R. S., &c. London: Churchill, 1854. 8vo. pp. 55.
5. The Book of Prescriptions: containing 2900 Prescriptions collected from the Practice of the most eminent Physicians and Surgeons, English and Foreign. Comprising also a Compendious History of the Materia Medica of all Countries, alphabetically arranged, and Lists of the Doses of all Officinal or established Preparations. By Henry Beasley. London: Churchill, 1854. Post 8vo. pp. 543.
6. Mémoire sur les Luxations des Cartilages Costaux. Par Louis Saurel, D. M. M., &c. Montpellier: Patras, 1854. 8vo. pp. 46.
7. Handbook for the Management of Cholera, till Medical Aid can be procured. By William Kingsley, M. D., F. R. C. S. I., &c. Roscrea, 1854. Pamphlet, pp. 12.
8. An Expository Lexicon of the Terms, Ancient and Modern, in Medical

and General Science ; including a complete Medical and Medico-Legal Vocabulary, &c. By R. G. Mayne, M. D., Surgeon to the Leeds Lock Hospital, &c. Parts II. and III. London : Churchill, 1854. 8vo. Cam. to Hyd.

9. A Practical Treatise on the Diseases of the Eye. By William Mackenzie, M. D., Surgeon to the Glasgow Infirmary, &c. Fourth Edition. London : Longmans, 1854. 8vo. pp. 1107.

[*This New Edition of Dr. Mackenzie's celebrated Treatise on Diseases of the Eye is truly a miracle of industry and learning. We need scarcely say that he has entirely exhausted the subject of his specialty when we state that this Monograph contains 1107 pages of closely printed matter in small type.*]

10. The Topical Medication of the Larynx in certain Diseases of the Respiratory and Vocal Organs. By Eben Watson, A. M., M. D., Fellow of the College of Physicians of Glasgow. London : Churchill, 1854. 8vo. pp. 183.

11. The Relative Merits of Empiricism and Rationalism in the present state of Medical Science. By A. Henry, M. D. London : Richards, 1854. Pamphlet, pp. 16.

12. A System of Instruction in Quantitative Chemical Analysis. By Dr. C. Remigius Fresenius, Professor of Chemistry, &c., Wiesbaden. Second Edition. Edited by J. Lloyd Bullock, F. C. S. London : Churchill, 1854. 8vo. pp. 624.

[*Considerably augmented in size, and much improved in all respects, the New Edition of this Volume will be found necessary on the table of every practical Chemist.*]

13. The Use of the Blowpipe in the Qualitative and Quantitative Examination of Minerals, Ores, Furnace Products, and other Metallic Combinations. By Professor Plattner, Assay Master at the Royal Freyburgh Smelting Works ; and Dr. Sheridan Muspratt, F. R. S. E., M. R. I. A., &c. Third Edition. London : Churchill, 1854. 8vo. pp. 405.

[*The value placed by the assayer on Dr. Plattner and Muspratt's Manual of the Blow-pipe is best shown by the requirement of a Third Edition within a few years.*]

14. Syphilitic Eruptions, Ulcerations, and other Secondary Symptoms, with especial reference to the Use and Abuse of Mercury. Illustrated by Cases. Second Edition. By J. Hunt, F. R. C. S., &c. London : Churchill, 1854. Pamphlet, pp. 95.

[*This little Pamphlet seems to us to be written rather as a bait for practice than with any view of enlightening the Profession. Its contents are not at all in accord with the lengthy title.*]

15. On the Construction, Organization, and General Management of Hospitals for the Insane. By Thomas S. Kirkbride, M. D., &c. Philadelphia : Lindsay and Blakiston, 1854. 8vo. pp. 80.

16. A Manual of Pathological Anatomy. By C. Handfield Jones, M. B., F. R. S., &c., and E. H. Sieveking, M. D., &c. London : Churchill, 1854. Feap. 8vo. pp. 788.

[*In our next.*]

17. The Brain in relation to the Mind. By Joseph Swan. London : Longmans, 1854. 8vo. pp. 113.

[*In our next.*]

18. A Disquisition on certain Parts and Properties of the Blood. By David Tod, M. R. C. S., &c. With illustrative woodcuts. London : Churchill, 1854. 8vo. pp. 263.

19. Pathological and Surgical Observations ; including a short Course of Lectures delivered at the Lock Hospital ; and An Essay on the Surgical Treatment of Hemorrhoidal Tumours. By Henry Lee, F. R. C. S., &c. London : Churchill, 1854. 8vo. pp. 232.

20. **What to Observe at the Bedside and after Death in Medical Cases.** Published under the Authority of the London Medical Society of Observation. Second Edition. London: Churchill, 1854. Fcap. 8vo. pp. 156.
 [We are gratified to find that our very favourable notice of the First Edition of this excellent and useful little Volume has been ratified by the general voice of the Profession, as evidenced by the publication of a Second Edition in so short a time.]

21. **Experiments on the Communicability of Cholera to the Lower Animals.** By W. Lauder Lindsay, M. D., &c. (From the Edinburgh Medical and Surgical Journal, 1854.) Pamphlet, pp. 48.

22. **Dissertatio Ophthalmico-Medica Inauguralis de Perspicillis Stenopaeis, ad Visum, Obfuscata Cornea Turbatum, Emendandum Accomodatis.** A Thesis for the Degree of Doctor of Medicine in the University of Utrecht. By H. Van Wyngaarden. 8vo. pp. 33.

23. **Dissertatio Ophthalmico-Medica Inauguralis continens de Corporis Vitrei Structura disquisitiones Anatomicas, Entopticas et Pathologicas.** A Thesis for the Degree of Doctor of Medicine in the University of Utrecht. By Andrew Doncan. 1854. 8vo. pp. 68.

24. **Medical Student's Guide: containing the latest Regulations of all the Licensing Medical Corporations, &c., &c.** Dublin: Fannin and Co. Fcap. 8vo. pp. 176.
 [Carefully edited, and accurately compiled.]

25. **The Poor Man's Medical Guide in Emergency.** By a Fellow of the Royal College of Surgeons, Ireland. Kilkenny: Shearman. 12mo. pp. 30.
 [This concise Essay, from the pen of one of our County Infirmary Surgeons, supplies a want much felt by Country Practitioners, and will, we think, help to lighten their labours with the poor. It is most judiciously written, and affords enough, and not too much, of that information on Diseases and Accidents which the lower orders ought to possess.]

26. **The Piratical Specific.** New and Infallible Mode of Treatment for the Asiatic Cholera. By Dr. F. Wilson, of Mauritius. London: Churchill, 1854. Pamphlet, pp. 27.

27. **The Practitioner's Pharmacopeia and Universal Formulary;** containing 2000 Classified Prescriptions, selected from the Practice of the most eminent British and Foreign Medical Authorities; with an Abstract of the Three British Pharmacopeias, and much other useful Information for the Practitioner and Student. By J. Foote, M. R. C. S. L., &c. London: Renshaw, 1855. Post 8vo. pp. 368.

28. **Unsoundness of Mind in relation to Criminal Acts.** An Essay to which the First Sugden Prize was this year awarded, by the King and Queen's College of Physicians in Ireland. By J. C. Bucknill, M. D., &c. London: Highley, 1854. Post 8vo. pp. 148.

29. **Medical Jurisprudence.** By Alfred S. Taylor, M. D., F. R. S., &c. Fifth Edition. London: Churchill, 1854. Fcap. 8vo. pp. 935.
 [We need scarcely say, that the Fifth Edition of Dr. Taylor's Manual is fully brought down to the date of publication. It has deservedly been for some years the established work on Medical Jurisprudence with both the Medical and Legal Professions.]

30. **Chloroform; its Properties and Safety in Childbirth.** By E. W. Murphy, A. M., M. D., &c. London: Walton and Maberly, 1855. 12mo. pp. 72.
 [In our next.]

31. **On the Mode of Communication of Cholera.** By John Snow, M. D., &c. Second Edition. London: Churchill, 1855. 8vo. pp. 162.

32. A Praactical Inquiry on the Vapour of Chloroform, as a Local Application. By S. L. Hardy, M. D., &c. Dublin: 1854. Pamphlet, pp. 40.

33. Letter to the Right Honourable the Secretary at War, on the Mediecal Department of the Army. From Sir George Ballingall, Regius Professor of Military Surgery in the University of Edinburgh. Pamphlet, pp. 16. [In our next.]

34. Mémoire sur L'Ostéo-Myélite. Par M. le Docteur Chassaignac, Chirurgien de l'Hôpital Lariboissière. Paris: Thunot at Ce., 1854. 8vo. pp. 36.

[In our next.]

35. Transactions of the Belfast Clinical and Pathological Society for the Session 1853-54. With List of Members, Laws of the Society, and Report of the Council; to which is added, a Catalogue of the Pathological Museum, Belfast: Mayne, 1854. 12mo. pp. 132.

36. Food and its Adulterations: comprising the Reports of the Analytical Sanitary Commission of the Lancet, for the Years 1851 to 1854 inclusive, revised and extended: being records of the Results of some Thousands of Original Microscopical and Chemical Analyses of the Solids and Fluids consumed by all Classes of the Public; and containing the Names and Addresses of the various Merchants, Manufacturers, and Tradesmen, of whom the Analyzed Articles were purchased. By A. H. Hassall, M. D., &c., Chief Analyst of the Commission. Illustrated by 159 Engravings, showing the intimate Structure of the greater number of the Vegetable Substances employed as Articles of Food, also the majority of the Substances used for Adulteration. London: Longman, Brown, Green, and Longmans, 1855. 8vo. pp. 659.

[In our next.]

37. The Histology of the Blood in the Insane. By W. L. Lindsay, M. D., late Assistant Physician, Crichton Royal Institution, Dumfries. Pamphlet, pp. 18.

PERIODICALS WITH WHICH THE DUBLIN QUARTERLY JOURNAL IS EXCHANGED.

GREAT BRITAIN.

1. The British and Foreign Medico-Chirurgical Review and Journal of Practical Medicine. Published Quarterly. London: Churchill, and Highley. (Received No. 29.)

2. The Edinburgh Medical and Surgical Journal; exhibiting a concise View of the latest and most important Discoveries in Medicine, Surgery, and Pharmacy. Published Quarterly. Edinburgh: Black. (Not yet received.)

3. The Retrospect of Medicine, being a half-yearly Journal, containing a retrospective View of every Discovery and practical Improvement in the Medical Sciences. Edited by W. Braithwaite. London: Simpkin and Co. (Received Vol. 30.)

4. The Half-Yearly Abstract of the Medical Sciences, being a practical and analytical Digest of the principal British and Continental Medical Works, &c. Published Half-Yearly. Edited by W. H. Ranking, M. D., and C. B. Radcliffe, M. D. London: Churchill. (Received Vol. 20.)

5. Pharmaceutical Journal and Transactions. Published Monthly. London. Edited by Jacob Bell. (Received regularly.)

6. The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science. Conducted by Sir D. Brewster, R. Taylor, Sir R. Kane, W. Francis, and J. Tyndall. Published Monthly. London: Taylor. (Received regularly.)

7. *The Chemist*, a Monthly Journal of Chemical Philosophy and of Chemistry. Edited by J. and C. Watt. London: Highley. (Received regularly.)

8. *Medical Times and Gazette*. Published Weekly. London: John Churchill. (Received regularly.)

9. *Medical Association Journal*. Edited by John Rose Cormack, M. D. Published Weekly. London: Honeyman. (Received regularly.)

10. *The Journal of Psychological Medicine and Mental Pathology*. Edited by Forbes Winslow, M. D. Published Quarterly. London: Churchill. (Received No. 29.)

11. *Quarterly Journal of Microscopical Science*: including the Transactions of the Microscopical Society of London. Edited by E. Lankester, M. D., F. R. S., &c., and G. Busk, F. R. C. S. E., F. R. S., &c. London: Highley. (Received regularly.)

12. *The Glasgow Medical Journal*. Published Quarterly. Griffin and Co. (Received regularly.)

13. *The Athenæum—Journal of English and Foreign Literature, Science, &c.* Published Weekly. London. (Received regularly.)

INDIA.

14. *The Indian Annals of Medical Science*; or, Half-Yearly Journal of Practical Medicine and Surgery. Calcutta: Lepage and Co. (Last No. not received.)

AMERICA.

15. *The American Journal of the Medical Sciences*. Edited by Isaac Hays, M. D. Published Quarterly. Philadelphia: Blanchard and Lea. (Received regularly.)

16. *The Medical Examiner and Record of Medical Science*. Edited by S. L. Hollingsworth, M. D. Published Monthly. Philadelphia: Lindsay and Blakiston. (Received regularly.)

17. *The New York Journal of Medicine and the Collateral Sciences*. Edited by S. S. Purple, M. D., and S. Smith, M. D. Published Monthly. New York. (Received regularly.)

18. *The American Journal of Science and Arts*; conducted by Professors Silliman and B. Silliman, Jun., and J. D. Dana. Published Bi-monthly. New Haven. (Received regularly.)

19. *The American Journal of Insanity*. Published by the New York State Lunatic Asylum, Utica, Quarterly. (Received regularly.)

20. *The American Journal of Dental Science*. Edited by C. A. Harris, M. D., A. A. Blandy, M. D., and A. S. Piggot, M. D. Published Quarterly. Philadelphia: Lindsay and Blakiston. (Received regularly, except Vol. IV. No. 1.)

21. *The Boston Medical and Surgical Journal*. Published Weekly. Boston: Clapp. (Received very irregularly of late.)

FRANCE.

22. *Gazette Médicale de Paris*. Published Weekly. Paris. (Received regularly.)

23. *Gazette Hebdomadaire de Médecine et de Chirurgie*. Published Weekly. Paris: Victor Masson. (Received regularly.)

24. *Journal de Chimie Médicale, de Pharmacie, de Toxicologie, et Revue des nouvelles, scientifiques, nationales et étrangères, &c.* Published Monthly. Paris: Labé. (Received regularly.)

25. Journal de Pharmacie et de Chimie, &c. Published Monthly. Paris: Victor Masson. (Received regularly.)

26. L'Union Médicale, Journal des intérêts scientifiques et pratiques, moraux et professionnels du Corps médical. Published three times a Week. Paris. (Received regularly.)

27. La Lancette Française, Gazette des Hôpitaux civils et militaires. Published three times a Week. Paris. (Received regularly.)

28. Le Moniteur des Hôpitaux, Journal des Progrès de la Médecine et de la Chirurgie Pratiques. Redacteur en chef: M. H. de Castelnau. Paris. Published three times a Week. (Received regularly.)

29. Revue Médicale Française et étrangère, Journal des Progrès de la Médecine Hippocratique. Published twice a Month. Par J. B. Cayol. Paris. (Received regularly.)

30. Revue Médico-Chirurgicale de Paris. Sous la Direction de M. Malgaigne. Published Monthly. (Received regularly.)

31. Archives Générales de Médecine; Journal Complémentaire des Sciences Médicales. Published Monthly. Paris: Labé. (Received regularly.)

32. Bulletin de l'Académie Nationale de Médecine. Published Monthly. Paris: Baillière. (Received regularly.)

33. Mémoires de l'Académie de Médecine. (Received regularly.)

34. Revue de Thérapeutique Médico-Chirurgicale. Published twice a Month. Paris: Dr. A. Martin-Lauzer. (Received regularly.)

35. Journal de Médecine et de Chirurgie Pratiques à l'Usage des Médecins. Published Monthly. Par Lucas Champonnière. Paris. (Received regularly.)

36. Journal des Connaissances Médicales pratiques et de Pharmacologie. Published twice a Month. Paris. (Received regularly.)

37. Annales Médico-Psychologiques. Par MM. Baillarger, Brierre de Boismont, et Cerise. Published Quarterly. Paris: Victor Masson. (Received regularly.)

38. Bulletin Général de Thérapeutique, Médicale et Chirurgicale. Recueil pratique. Publié par le Docteur Debout. Published twice a Month. Paris. (Received regularly.)

39. Répertoire de Pharmacie. Recueil pratique. Par M. le Dr. Bouchardat. Published Monthly. (Received regularly.)

40. Archives d'Ophthalmologie, comprenant les travaux les plus importants sur l'Anatomie, la Physiologie, la Pathologie, l'Hygiène et la Thérapeutique de l'Appareil de la Vision. Par M. A. Jamain, Docteur en Médecine, &c. Published Monthly. Paris. (Received regularly.)

41. Gazette Médicale de Strasbourg. Published Monthly. (Received regularly.)

42. Revue Thérapeutique du Midi, &c. Publié par le Dr. Louis Saurel. Published twice a Month. Montpellier. (Received regularly.)

43. Journal de Médecine de Bordeaux. Redacteur en chef, M. Costes. Published Monthly. (Received regularly.)

BELGIUM.

44. Annales D'Oculistique. Fondées par le Docteur Florent Cunier. Published Monthly. Brussels. (Received regularly.)

45. Nouvelle Encyclopédie des Sciences Médicales. Publié par une Société de Médecins. Published Monthly. (Received regularly.)

46. *Annales et Bulletin de la Société de Médecine de Gand.* Published Monthly. (Received regularly.)

GERMANY.

47. *Zeitschrift für rationelle Medicin*; herausgegeben Von Dr. J. Henle and Dr. C. Pfeiffer. Professoren der Medizin an der Universität zu Heidelberg. Published Monthly. (Received Vol. IV. No. 2.)

48. *Der ärztliche Hausfreund*, herausgegeben von R. Froriep. Landes-Industrie-Comptoir, in Weimar. (Nos. 52 to 57 not received.)

49. *Zeitschrift der Kais. Kön. Gesellschaft der Aerzte zu Wien.* Redacteur: Professor, Dr. Ferdinand Hebra. (No. 12, for 1853, and Nos. 3, 4, and 6, for 1854, not received.)

50. *Vierteljahrsschrift für die praktische Heilkunde*, herausgegeben von der medicinischen Facultät in Prag. Published Quarterly. Karl André. (Received regularly. Parts 2 and 4, 1851, and Parts 2 and 3, 1850, not received.)

51. *Annalen der Chemie und Pharmacie*. Herausgegeben von F. Wöhler und J. Liebig. Published Monthly. Heidelberg. (Received regularly.)

52. *Canstatt's Jahresbericht über die Fortschritte der gesammten Medicin in allen Ländern*, im Jahre 1852. Redigirt von Pr. Scherer, Pr. Virchow, und Dr. Eisenmann. Würzburg: Stahel. (Received regularly.)

53. *Journal für Kinderkrankheiten*. Herausgegeben von Dr. Fr. J. Behrend und Dr. A. Hildebrand. Published Monthly. Erlangen: Palm und Enke. (Parts 3 and 4, 1854, not received.)

54. *Archiv für pathologische Anatomie und Physiologie, &c.*, Herausgegeben von R. Virchow. Berlin. Published Monthly. (Received regularly.)

SWITZERLAND.

55. *Verhandlungen der Naturforschenden Gesellschaft in Zurich*. Published Weekly. (Not yet received.)

HOLLAND.

56. *Nederlandsch Lancet*. (Received regularly.)

DENMARK.

57. *Bibliothek for Læger*, Tredie Række. Udgivet af Direktionen for de classenske Literaturseiskab. Redigeret af Dr. Dahlerup. Published Monthly. Kjobenhavn. (Not received.)

58. *Hospitalsmeddelelser*. Copenhagen. (Not received.)

NORWAY.

59. *Norsk Magazin, for Lægevidenskaben*, udgivet af det medicinske Selskab i Christiania. Redigeret af W. Boeck, Faye, A. W. Münster. Lund, Voss. Published Monthly. Christiania: Feilberg & Landmark. (Received regularly.)

SWEDEN.

60. *Hygiea. Medicinska och Farmaceutiska Månads-Skrift*. Published Monthly. Stockholm: Fritze. (Received regularly.)

ITALY.

61. *Gazzetta Medica Italiana Federativa Toscana*. Florence. Published Weekly. (Received regularly, except No. 3, for 1854.)

62. *Bulletino delle Scienze Mediche.* Published per cura della Società Medico-Chirurgica di Bologna. Published Monthly. (Received regularly.)

63. *Giornale Veneto di Scienze Mediche.* Published Monthly. (Received regularly.)

SPAIN.

64. *El Heraldo Médico.* Edited by Professor G. de le Vega. Madrid. Published Weekly. (Received irregularly.)

NOTICES TO CORRESPONDENTS.

Books and Periodicals published in Northern Europe, intended for our Journal, should be transmitted "For the Editor of the Dublin Quarterly Medical Journal, care of Messrs. Williams and Norgate, London," *through their Correspondents* in the principal Towns on the Continent. Our Correspondents in France, Belgium, Southern Germany, Italy, and Spain, are requested to communicate with us through "Doctor Higgins, 30, Rue Rivoli, Paris."

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12. Food and its Adulterations; comprising the Reports of the Analytical Sanitary Commission of the *Lancet*, for the Years 1851 to 1854 inclusive, revised and extended: being Records of the Results of some Thousands of Original Microscopical and Chemical Analyses of the Solids and Fluids consumed by all Classes of the Public; and containing the Names and Addresses of the various Merchants, Manufacturers, and Tradesmen, of whom the Analyzed Articles were purchased. By A. H. Hassall, M. D., &c., Chief Analyst of the Commission. Illustrated by 159 Engravings, showing the intimate Structure of the greater number of the Vegetable Substances employed as Articles of Food, also the majority of the Substances used for Adulteration, 442

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Duncan on the Statics of Pregnancy. MacLise's Surgical Anatomy. Sibson's Medical Anatomy. Sichel's *Iconographie Ophthalmologique*. Arnott on Congelation in Cancer. Brodhurst on Lateral Curvature. Wilmot on Dysentery. The *Cyclopædia of Anatomy*. The different Methods of Treating Cholera. Medical Charities, Ireland, Report. Medical Statistics of the Dublin Police.

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BOOKS RECEIVED.

1. *Eutherapeia; or, an Examination of the Principles of Medical Science, with Researches in the Nervous System.* By R. Garner, Surgeon to the North Staffordshire Infirmary, &c. London: Churchill, 1855. 8vo. pp. 282.
2. *Lithotomy simplified; or, a New Method of Operating for Stone in the Bladder; to which is appended an Interesting and Unique Case of Cæsarean Section.* By G. Allarton, M. R. C. S. E., &c. London: Ash and Flint, 1854. 8vo. pp. 80.
3. *The Pathology of the Bronchio-Pulmonary Mucous Membrane.* By C. Black, M. D., &c. Edinburgh: Sutherland and Knox, 1855. Part II. pp. 102 to 155.
4. *Notes on some of the Developmental and Functional Relations of certain portions of the Cranium.* Selected by W. Pavey, M. D., from the Lectures on Anatomy delivered at Guy's Hospital, by John Hilton, F. R. S. London: Churchill, 1855. 8vo. pp. 93.
5. *On the Statics of Pregnancy.* By Matthews Duncan, M. D., &c. Edinburgh: Printed by Neill and Co., 1855. Pamphlet, pp. 20.
[*A valuable reprint from the Edinburgh Medical and Surgical Journal; it contains much original observation, illustrated by diagrams, on an interesting subject in Midwifery.*]
6. *The Diagnosis of Surgical Cancer (the Liston Prize Essay for 1854).* By J. Z. Laurence, Surgeon to the Northern and Farringdon Dispensaries, &c. London: Churchill, 1855. 8vo. pp. 77.
7. *Surgical Anatomy.* By Joseph Maclise, F. R. C. S. Second Edition. London: Churchill. Parts V., VI., and VII.
[*Of these three parts we need merely say that they fully equal in all respects those which preceded them. The publication is certainly a miracle of cheapness, and the Surgical Profession owes much to Mr. Churchill for placing such a valuable assistant to the operator within the reach of even the most junior student.*]
8. *Medical Anatomy.* By Francis Sibson, M. D., F. R. S., &c. London: Churchill. Part I.
[*This is another example of the boons which the spirited publisher has given to the Profession, and for which he has been justly rewarded in the patronage bestowed on him. We do not consider the execution of the Plates altogether so good as in Maclise's Surgical Anatomy, but the extremely low price at which they are published precludes all cavil on this head. It promises to be a most useful and important work, and as soon as we receive some more of the Parts, we will notice it at length in our Review department.*]
9. *A Practical Treatise on Foreign Bodies in the Air-passages.* By S. D. Gross, M. D., Professor of Surgery in the University of Louisville, &c. With Illustrations. Philadelphia: Lea and Blanchard, 1854. 8vo. pp. 468.
10. *Contributions to Teratology.* By A. M. Adam, M. D., &c. (From the Edinburgh Monthly Journal), 1854. Pamphlet, pp. 32.
11. *Iconographie Ophthalmologique, ou Descriptions et Figures Coloriées des Maladies de l'Organe de la Vue, comprenant l'Anatomie Pathologique, la Pathologie et la Thérapeutique Médico-Chirurgicales.* Par le Docteur J. Sichel, Professeur d'Ophthalmologie, Médecin-Oculiste des Maisons d'éducation de la Légion d'honneur, etc. Paris and London: Hippolyte Baillière, 1852 and 1853. 4to. Parts V., VI., and VII.
[*Three more Parts are here presented to us of M. Sichel's beautifully illustrated book. They are fully deserving of the praise which we bestowed on the earlier Parts in our Seventeenth Volume.*]

12. On the Treatment of Cancer by Congelation, and an Improved Mode of Pressure, separately or combined. With an Appendix on the Use of Congelation in Inflammatory Affections of the Uterus. Second Edition. By James Arnott, M. D., &c. London: Churchill, 1855. 8vo. pp. 64.

[*This new edition of Dr. Arnott's Essay contains several important additions and new facts, in illustration of the value of Congelation as a therapeutic agent.*]

13. Fourth Annual Report of the Manchester Royal Lunatic Hospital, for the Year, June, 1853, to June, 1854. Manchester, 1855. Pamphlet, pp. 36.

14. Report of the Committee of Visitors and Medical Superintendent of the Devon County Lunatic Asylum. Exeter, 1855. Pamphlet, pp. 21.

15. On the Treatment of Ununited Fracture by means of Artificial Limbs, which combine the Principle of Pressure and Motion at the seat of Fracture, and lead to the formation of ensheathing Callus. Illustrated by the History of Four Cases of False Joint in the Femur, Eight in the Leg, and Two in the Humerus. By H. Smith, M. D., &c. Philadelphia: Collins, 1855. Pamphlet, pp. 20.

16. On Lateral Curvature of the Spine: its Pathology and Treatment. By B. E. Brodhurst, M. D., &c. London: Churchill, 1855. Fcap. 8vo. pp. 66. With Lithographs.

[*One of those small books so common in London, written to obtain practice in a specialty.*]

17. On the Use of Creasote in Scorbutic Camp Dysentery. By J. B. Wilmot, M. D., &c. London: Churchill, 1855. Pamphlet, pp. 16.

[*From the good effects which Creasote injections—a drachm to twelve ounces of thin starch or gruel—had produced in some cases of the disease in a poor-house, the author hurries into print to recommend it as a universal remedy for this disease, especially addressing himself to our medical men at the seat of war. We shall merely say that Dr. Wilmot does not at all prove his conclusions.*]

18. On the Pathology and Treatment of Leucorrhœa. By W. Tyler Smith, M. D., &c. London: Churchill, 1855. 8vo. pp. 217.

[*In our next.*]

19. An Expository Lexicon of the Terms, Ancient and Modern, in Medical and General Science; including a complete Medical and Medico-Legal Vocabulary, and presenting the correct Pronunciation, Derivation, Definition, and Application of the Names, Analogues, Synonymes, and Phrases (in English, Latin, Greek, French, and German), connected with Medicine, and employed in Anatomy, Astronomy, Botany, Chemistry, &c. London: Churchill, 1855. Part IV. pp. 457 to 608.

20. On Electro-Lithotrihy; or, the Application of the Mechanical Force Electrical Discharge to the Disintegration of Stone in the Bladder. By George Robinson, M. D., &c., Newcastle-on-Tyne. London: Churchill, 1855. 4to. pp. 16.

21. The Cyclopædia of Anatomy and Physiology. Edited by R. B. Todd, M. D., F. R. S., &c. Part XLV. Pelvis to Respiration.

[*This splendid work is drawing rapidly to a close; the present Part fully sustains the character of the whole.*]

22. Report on the Results of the Different Methods of Treatment pursued in Epidemic Cholera. Addressed to the President of the General Board of Health. By the Treatment Committee of the Medical Council. Presented to both Houses of Parliament by command of Her Majesty. Pamphlet, pp. 28.

[*A highly valuable summary of the results of the effect of various remedies employed singly or combined in the treatment of Epidemic Cholera.*]

23. Report by the President's Council of the Royal College of Surgeons of Edinburgh, March 9, 1855, upon a Document entitled, "Draft Bill for an Act for Regulating and Improving the Medical Profession." Folio. pp. 5.

24. Pathological and Clinical Observations respecting Morbid Conditions of the Stomach. By C. Handfield Jones, M. B., &c. London: Churchill. 8vo. pp. 226.

[*In our next.*]

25. Des Fluxions au point de vue Chirurgical. Thèse de Concours pour l'Agrégation en Chirurgie, présentée à la Faculté de Médecine de Montpellier. Par Louis-J. Saurel, D. M., &c. Paris: J. B. Baillière, 1855. 8vo. pp. 156.

[*In our next.*]

26. The British Journal of Homœopathy. No. LII. April, 1855. London: Groombridge and Sons.

27. Seventh Report of the Somerset County Pauper Lunatic Asylum, from the 1st of January to the end of the Year 1854. Wells: Backhouse, 1855. Pamphlet, pp. 65.

28. Lectures in reply to the Croonian Lectures, for 1854, of Charles West, of London, on the Pathological Importance of Ulceration of the Os Uteri. By Henry Miller, M. D., Professor of Obstetric Medicine in the University of Louisville, U. S. Louisville, Kentucky: Brennan, 1855. 8vo. pp. 71.

[*In our next.*]

29. The Quarterly Journal of Public Health and Record of Medicine; including the Transactions of the Epidemiological Society of London. Edited by Dr. B. W. Richardson. No. I. March, 1855. London: Highley.

30. Medical Charities, Ireland. Third Annual Report of the Commissioners for Administering the Laws for Relief of the Poor in Ireland, under the Medical Charities Act. Presented to both Houses of Parliament, by Command of Her Majesty. 1855. 8vo. pp. 381.

[*This Report abounds in most important statistics as to the state of the sick poor and the outbreak of epidemics in Ireland during the past year.*]

31. Medical Statistics of the Dublin Metropolitan Police; with Report of the Medical Officers for the Year 1854. Dublin: Thom and Sons, 1855. Folio, pp. 7.

[*We are here presented by the Medical Officers of the City of Dublin Police, Dr. Ireland and Sir Arthur Clarke, with a valuable summary of the status of disease in the Force for the past twelve months. An important practical conclusion with regard to the early treatment of the premonitory diarrhoea of cholera may be drawn from it—but thirty cases of the fully developed disease having occurred, and of these none proved fatal.*]

32. The Ethnological Exhibitions of London. By John Conolly, M. D., D. C. L., &c. London: Churchill, 1855. Pamphlet, pp. 44.

PERIODICALS WITH WHICH THE DUBLIN QUARTERLY JOURNAL IS EXCHANGED.

GREAT BRITAIN.

1. The British and Foreign Medico-Chirurgical Review and Journal of Practical Medicine. Published Quarterly. London: Churchill, and Highley. (Received No. 30.)

2. The Edinburgh Medical and Surgical Journal; exhibiting a concise View of the latest and most important Discoveries in Medicine, Surgery, and Pharmacy. Published Quarterly. Edinburgh: Black. (Last Number received.)

3. The Retrospect of Medicine, being a half-yearly Journal, containing a retrospective View of every Discovery and practical Improvement in the Medical Sciences. Edited by W. Braithwaite. London: Simpkin and Co.

4. The Half-Yearly Abstract of the Medical Sciences, being a practical and analytical Digest of the principal British and Continental Medical Works, &c. Published Half-Yearly. Edited by W. H. Ranking, M. D., and C. B. Radcliffe, M. D. London: Churchill.
5. Pharmaceutical Journal and Transactions. Published Monthly. London. Edited by Jacob Bell. (Received regularly.)
6. The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science. Conducted by Sir D. Brewster, R. Taylor, Sir R. Kane, W. Francis, and J. Tyndall. Published Monthly. London: Taylor. (Received regularly.)
7. The Chemist, a Monthly Journal of Chemical Philosophy and of Chemistry. Edited by J. and C. Watt. London: Highley. (Last Number not received.)
8. Medical Times and Gazette. Published Weekly. London: John Churchill. (Received regularly.)
9. Medical Association Journal. Edited by John Rose Cormack, M. D. Published Weekly. London: Honeyman. (Received regularly.)
10. The Journal of Psychological Medicine and Mental Pathology. Edited by Forbes Winslow, M. D. Published Quarterly. London: Churchill. (Received No. 30.)
11. Quarterly Journal of Microscopical Science: including the Transactions of the Microscopical Society of London. Edited by E. Lankester, M. D., F. R. S., &c., and G. Busk, F. R. C. S. E., F. R. S., &c. London: Highley. (Received regularly.)
12. The Glasgow Medical Journal. Published Quarterly. Griffin and Co. (Received regularly.)
13. The Athenaeum—Journal of English and Foreign Literature, Science, &c. Published Weekly. London. (Received regularly.)

INDIA.

14. The Indian Annals of Medical Science; or, Half-Yearly Journal of Practical Medicine and Surgery. Calcutta: Lepage and Co. (No. 3 received.)

AMERICA.

15. The American Journal of the Medical Sciences. Edited by Isaac Hays, M. D. Published Quarterly. Philadelphia: Blanchard and Lea. (Received regularly.)
16. The Medical Examiner and Record of Medical Science. Edited by S. L. Hollingsworth, M. D. Published Monthly. Philadelphia: Lindsay and Blakiston. (Received regularly.)
17. The New York Journal of Medicine and the Collateral Sciences. Edited by S. S. Purple, M. D., and S. Smith, M. D. Published Monthly. New York. (Received regularly.)
18. The American Journal of Science and Arts; conducted by Professors Silliman and B. Silliman, Jun., and J. D. Dana, &c. Published Bi-monthly. New Haven. (Received regularly.)
19. The American Journal of Insanity. Published by the New York State Lunatic Asylum, Utica, Quarterly. (Received regularly.)
20. The American Journal of Dental Science. Edited by C. A. Harris, M. D., A. A. Blandy, M. D., and A. S. Piggot, M. D. Published Quarterly. Philadelphia: Lindsay and Blakiston. (Received regularly.)
21. The Boston Medical and Surgical Journal. Published Weekly. Boston: Clapp. (No. 282, and Nos. 283 to 294, inclusive, not received.)

FRANCE.

22. Gazette Médicale de Paris. Published Weekly. Paris. (Received regularly.)

23. Gazette Hebdomadaire de Médecine et de Chirurgie. Published Weekly. Paris: Victor Masson. (Received regularly.)

24. Journal de Chimie Médicale, de Pharmacie, de Toxicologie, et Revue des nouvelles, scientifiques, nationales et étrangères, &c. Published Monthly. Paris: Labé. (Received regularly.)

25. Journal de Pharmacie et de Chimie, &c. Published Monthly. Paris: Victor Masson. (Received regularly.)

26. L'Union Médicale, Journal des intérêts scientifiques et pratiques, moraux et professionnels du Corps médical. Published three times a Week. Paris. (Received regularly.)

27. La Lancette Française, Gazette des Hôpitaux civils et militaires. Published three times a Week. Paris. (Received regularly.)

28. Le Moniteur des Hôpitaux, Journal des Progrès de la Médecine et de la Chirurgie Pratiques. Redacteur en chef: M. H. de Castelnau. Paris. Published three times a Week. (Received regularly.)

29. Revue Médicale Française et étrangère, Journal des Progrès de la Médecine Hippocratique. Published twice a Month. Par J. B. Cayol. Paris. (Received regularly.)

30. Revue Médico-Chirurgicale de Paris. Sous la direction de M. Malgaigne. Published Monthly. (Received regularly.)

31. Archives Générales de Médecine; Journal Complémentaire des Sciences Médicales. Published Monthly. Paris: Labé. (Received regularly.)

32. Bulletin de l'Académie Nationale de Médecine. Published Monthly. Paris: Baillière. (Received regularly.)

33. Mémoires de l'Académie de Médecine. (Received regularly.)

34. Revue de Thérapeutique Médico-Chirurgicale. Published twice a Month. Paris: Dr. A. Martin-Lauzer. (Received regularly.)

35. Journal de Médecine et de Chirurgie Pratiques à l'Usage des Médecin. Published Monthly. Par Lucas Champonnière. Paris. (Not received since No. 5, for 1854.)

36. Journal des Connaissances Médicales pratiques et de Pharmacologie. Published twice a Month. Paris. (Received regularly.)

37. Annales Médico-Psychologiques. Par MM. Baillarger, Briere de Boismont, et Cerise. Published Quarterly. Paris: Victor Masson. (Received regularly.)

38. Bulletin Général de Thérapeutique, Médicale et Chirurgicale. Recueil pratique. Publié par le Docteur Debout. Published twice a Month. Paris. (Received regularly.)

39. Repertoire de Pharmacie. Recueil pratique. Par M. le Dr. Bouchardat. Published Monthly. (Received regularly.)

40. Archives d'Ophthalmologie, comprenant les travaux les plus importants sur l'Anatomie, la Physiologie, la Pathologie, l'Hygiène et la Thérapeutique de l'Appareil de la Vision. Par M. A. Jamain, Docteur en Médecine, &c. Published Monthly. Paris. (Received regularly.)

41. Gazette Médicale de Strasbourg. Published Monthly. (Received regularly.)

42. *Revue Thérapeutique du Midi, &c.* Par le Dr. Louis Saurel. Published twice a Month. Montpellier. (Received regularly.)

43. *Journal de Médecine de Bordeaux.* Redacteur en chef, M. Costes. Published Monthly. (Received regularly.)

BELGIUM.

44. *Annales D'Oculistique.* Fondées par le Docteur Florent Cunier. Published Monthly. Brussels. (Received regularly.)

45. *Nouvelle Encyclographie des Sciences Médicales.* Publiée par une Société de Médecins. Published Monthly. (Received regularly.)

46. *Annales et Bulletin de la Société de Médecine de Gand.* Published Monthly. (Nos. 1 and 2, for 1854, not received.)

GERMANY.

47. *Zeitschrift für rationelle Medicin;* herausgegeben Von Dr. J. Henle and Dr. C. Pfeifer, Professoren der Medizin an der Universität zu Heidelberg. Published Monthly. (Last Number received, Vol. IV. No. 2.)

48. *Der ärztliche Hausfreund,* herausgegeben von R. Froriep. Landes-Industrie-Comptoir, in Weimar. (Nos. 52 to 57 not received.)

49. *Zeitschrift der Kais. Kön. Gesellschaft der Aerzte zu Wien.* Redacteur: Professor, Dr. Ferdinand Hebra. (No. 12, for 1853, and Nos. 3, 4, and 6, 9, 10, 11, for 1854, not received.)

50. *Vierteljahrsschrift für die praktische Heilkunde,* herausgegeben von der medicinischen Facultät in Prag. Published Quarterly. Karl André. (Received regularly.)

51. *Annalen der Chemie und Pharmacie.* Herausgegeben von F. Wöhler und J. Liebig. Published Monthly. Heidelberg. (Received regularly.)

52. *Canstatt's Jahresbericht über die Fortschritte der gesammten Medicin in allen Ländern,* im Jahre 1852. Redigirt von Pr. Scherer, Pr. Virchow, und Dr. Eisenmann. Würzburg: Stahel. (Received regularly.)

53. *Journal für Kinderkrankheiten.* Herausgegeben von Dr. Fr. J. Behrend und Dr. A. Hildebrand. Published Monthly. Erlangen: Palm und Enke. (Parts 3 and 4, 1854, not received.)

54. *Archiv für pathologische Anatomie und Physiologie, &c.,* Herausgegeben von R. Virchow. Berlin. Published Monthly. (Received regularly.)

55. *Wochenblatt der Zeitschrift der kaiserl. königl. Gesellschaft der Aerzte zu Wien.* Published Weekly. (Received Nos. 1 to 10.)

HOLLAND.

56. *Nederlandsch Lancet.* (Received regularly.)

NORWAY.

57. *Norsk Magazin, for Lægevidenskaben,* udgivet af det medicinske Selskab i Christiania. Redigeret af W. Boeck. Faye. A. W. Münster. Lund. Voss. Published Monthly. Christiania: Feilberg & Landmark. (Received regularly.)

SWEDEN.

58. *Hygiea, Medicinsk och Pharmaceutisk Månads-Skrift.* Published Monthly. Stockholm: Fritze. (Received regularly.)

ITALY.

59. *Gazzetta Medica Italiana Federativa Toscana.* Florence. Published Weekly. (Received regularly, except No. 3, for 1854.)

60. *Bulletino delle Scienze Mediche.* Published per cura della Società Medico-Chirurgica di Bologna. Published Monthly. (Received regularly.)

61. *Giornale Veneto di Scienze Mediche.* Published Monthly. (Received regularly.)

SPAIN.

62. *El Heraldo Médico.* Edited by Professor G. de le Vega. Madrid. Published Weekly. (Received regularly.)

NOTICES TO CORRESPONDENTS.

We have received the following communication from Mr. Butcher relative to his Essay on Excision of the Knee-Joint, published in our last Number:—

“ TO THE EDITOR OF THE DUBLIN QUARTERLY JOURNAL.

“ SIR.—May I request you will insert in the next Number of the Quarterly the following remarks:—

“ In the Paper written by me on Excision of the Knee-Joint, and published in the February Number of the Dublin Quarterly Journal, I was wrong in attributing to Mr. Mackenzie the credit of saving the patella, when practicable, in this operation; whereas this improvement, as well as keeping its ligament intact, should have been given to Mr. Jones, of Jersey. I take this, the earliest, opportunity of rectifying my error.

“ I have the honour to remain, Sir,

“ *Herbert-place.*”

“ Your obedient Servant,

“ R. G. H. BUTCHER.

Books and Periodicals published in Northern Europe, intended for our Journal, should be transmitted “ For the Editor of the Dublin Quarterly Medical Journal, care of Messrs. Williams and Norgate, London,” *through their Correspondents* in the principal Towns on the Continent. Our Correspondents in France, Belgium, Southern Germany, Italy, and Spain, are requested to communicate with us through “ Doctor Higgins, 30, Rue Rivoli, Paris.”



Wm. H. W.

THE DUBLIN
QUARTERLY JOURNAL
OF
MEDICAL SCIENCE.

FEBRUARY 1, 1855.

PART I.
ORIGINAL COMMUNICATIONS.

ART. I.—*On Excision of the Knee-Joint.* By RICHARD G. H. BUTCHER, Esq.: Surgeon to Mercer's Hospital; Fellow and Member of Council of the Royal College of Surgeons in Ireland; Licentiate of that body, and Examiner on Anatomy, Physiology, and Pathology thereto for five years; Member of the Royal College of Surgeons in England, &c.

CARIES, and all those kinds of lesions comprised under the name of White Swellings, often become so serious as to be beyond any other remedy than the removal of the diseased portions; they occasion, in fact, three-fourths of the amputations which occur. Amputation of the thigh removes the whole of the limb, and obliges us to sacrifice a great extent of sound parts. The question has been asked, if it would not be possible to restrict ourselves to the removal of the tissues and the portions of bone actually diseased? The honour of originating the operation, as it is now performed, of basing it on sound surgical principles, and of showing its applicability to several of the large articulations, is unquestionably due to Mr. Henry Park, of Liverpool. The papers in which this gentleman proposes the operation evince a candid, reflecting, and enterprising mind. The circumstance of his not having had the opportunity of car-

rying his ideas extensively into practice, will weigh little with those who can appreciate the sound arguments by which the proposal is supported; and, as Mr. Blackburne observes, "the foresight which predicts the result of an untried measure evinces higher talent than the industry which collects together the evidences of experience." The record of the first actual performance of excision of the knee-joint is given in a letter from Mr. Park to Percival Pott, bearing date September 18, 1782; and from this account we find that the operation was performed by him in a case of scrofulous disease of the knee-joint, on the 2nd of July, 1781. In the year 1789, 5th of November, we have another case of excision of the knee-joint, as communicated in a letter to Dr. Simmons, and published in the eleventh volume of the London Medical Journal. Eight years having elapsed since his former bold operation, he reverts to it as crowned with success, and thus writes:—"To the history of the case of Hector M'Caghen, there related, I have now to add, that he afterwards made several voyages to sea, in which he was able to go aloft with considerable agility, and to pursue all the duties of a seaman; that he was twice shipwrecked, and suffered great hardships without feeling any further complaint in that limb; but was at last unfortunately drowned by the oversetting of a flat in the river Mersey." Having completed this reference, he thus describes the second case upon which he operated:—A man, aged thirty years, but who was in every way unfitted for it, both from constitutional taint and extensive implication of the soft parts. The operation was performed agreeably to the patient's choice, and with little variation from the former one. However, this case was less fortunate, and the man sank about four months after its performance. After the publication of Mr. Park's pamphlet, Mr. Filkin, of Northwich, claimed priority as having performed a similar operation twenty years before, with success. Application was made for the particulars of the case, but disappointment followed, as that gentleman was soon after seized with a paralytic affection which greatly impaired his faculties, and at last terminated in his death. His son, a practising surgeon in Northwich, soon after answered by letter, from which the following is an extract:—"You will, I fear, think me very remiss in not answering your kind favour long before; but as my father's notes do not describe the case of the operation of the knee so plainly as I could wish, I have waited till an opportunity occurred, when I could see the man, to have what he knew on the matter; and though all I can collect on the subject is very trifling, still I beg leave to send you what little information I have gained. The pa-

tient was always of a scrofulous habit, and had for many years a tumour on the knee, which gradually increased in size, and to which every topical application was used without effect. By accident falling from a horse, the patella was fractured; and from a small wound there was discharged about half a pound of fetid, foul-coloured pus. Amputation was immediately proposed, but the parents not consenting, my father was called in. Having frequently thought this method might sometimes succeed, and having performed it once on the dead body, he proposed it to the parents of the patient in this case, though it was an unfavourable one, the patient's general health being much impaired. The parents consenting, a day was fixed for the operation, which was performed 23rd of August, 1762. The ligaments were found in a very sloughy, suppurative state, with the cartilages greatly injured, and the heads of the bones much diseased, particularly the head of the tibia. The patella, with the head of the femur and a portion of the tibia, were removed; a good digestion came on; the limb was kept in a straight position, and on the 21st of November, 1762, he was got so well as to require no further attention. The person is now living, and sometimes goes to Liverpool, where, if you will give me leave, I will desire him to call upon you." If the details of this case be correct, we have evidence of life being saved by operation, but are left in total ignorance of a point nearly as vital — the usefulness of the limb afterwards in progression.

In the year 1784 Mr. Park's observations on cutting out the articulating end of the bones of the elbow and knee-joints were translated and published in France by the celebrated Professor Lassus, whose authority, one would have thought, might have procured for them a favourable reception. They were received with astonishment; and so far were they from gaining credit, that even so late as 1789, they had acquired so small a number of partisans in the Academy of Surgery that some cases of a similar kind, which were presented to the Society by the senior Moreau, were rejected, though they were of such a nature, and stated in a way that might have deserved a more favourable reception. In September, 1792, M. Moreau excised the whole of a carious knee-joint from the son of a M. Clause, apothecary at Chalons-sur-Marne, in the presence of Baron Perey, Surgeon-General to the army of Kellerman, of M. Chamerlat, his colleague, and of several other eminent surgeons, both civil and military. The operation is described as being attended with success. In three months and a half afterwards the wound was healed, and the limb had acquired a considerable degree of firmness; but the Prussians,

in retiring from the French territory, left behind them an epidemic dysentery, which, as is well known, carried off the greater part of those who were attacked by it. It got into the hospital at Bar, where the patient was attacked, and he sank three months and a half after the operation. "This unfortunate accident," adds Moreau, "deprived me of the pleasure of enjoying the fruits of my care; but I remained convinced of the utility of the operation, and persuaded of the propriety of performing it in similar cases; I looked on my patient as cured, for I had no relapse to dread." Moreau operated a second time, and the operation proved also fatal. In a third case, by the younger Moreau, the result was more fortunate; the patient recovered with a serviceable limb. About this time, too, various excisions of the ankle, shoulder, elbow, and wrist-joints, were likewise accomplished; but in spite of the successful results of these cases, the operation, in reference to the knee, failed to excite attention. In subsequent observations by Mr. Park, in September, 1805, he writes:—"I am mortified to see that it [his pamphlet on *Excision of the Knee*, published in 1782] has to this day produced very little of the effect it was intended to produce." On the 21st of October, 1809, Mülder extirpated the knee-joint of a pregnant woman in the hospital of Gröningen; but she died of tetanus on the 8th of the following February. From a long period after this we find but little notice of the operation being performed, not, indeed, until the year 1823, when Sir Philip Crampton had recourse to it. Before and about this time in France and Germany there were a few instances in which it was executed, and with varying success. M. Roux (Private Correspondence, 1831) has published a case; his patient died on the nineteenth day. M. Fricke is said to have performed it four times, one only being cured. M. Textor operated twice; both patients died; M. Jaeger successfully in one case.

In the year 1823 Sir Philip Crampton operated a second time. His first case was that of a "woman aged 23, of a strumous habit and emaciated appearance, marked by several scars of scrofulous ulceration, some of which at the time were open on the left hand and arm." The second was also a female, a young woman, aged 22, "strong and remarkably good-looking, with dark hair, blue eyes, and sallow complexion, but presenting no peculiar character of a strumous habit." The first died three years and a half after the operation, without ever having been perfectly cured; the second recovered, and walked with a sole which had to be four inches thick^a. Mr. Syme next

^a Dublin Hospital Reports, vol. iv.

performed the operation, in 1829, on a boy aged eight years, with success; and in the year 1830 he repeated the operation on a little girl aged 7, "a very thin, weak, unhealthy-looking child." She sank eleven days after the operation. After Mr. Syme's experience at this time the operation was abandoned until within the last few years, when it was again revived.

For practical purposes I conceive it is absolutely essential to divide the institution of this operation into two distinct epochs —the first comprising all the cases operated on from the time of Park's first case in 1781 up to the period of its abandonment after Mr. Syme's failure in 1830; the second, including all those from the period of its revival by Mr. Fergusson in 1850 up to the present time.

The following is a Table of the Cases operated on within the first epoch:—

Operation.	No. of Cases.	Results.
Mr. Park,	2	1 cured, 1 died.
Filkin,	1	Cured.
The Moreaus, . . .	3	1 cured, 1 died from operation, 1 from dysentery when the limb was nearly well.
Mülder,	1	Cured of operation, died of tetanus after delivery.
Fricke,	4	1 cured, 3 died.
Textor,	2	Both died.
Jaeger,	1	Cured.
Roux,	1	Died.
Crampton,	2	1 cured, the other recovered from the operation, but was not cured,
Syme,	2	1 cured, 1 died.

On superficial inspection of this Table, the results of the operation on the whole will appear decidedly unsatisfactory. However, on closely analyzing the fatal cases, some will be found to bear but little upon the question of excision. Objection may be taken to Moreau's first case, for the patient died of epidemic dysentery. Immediately before he was attacked, his condition was most satisfactory; and the following is the statement made by Moreau:—"The consolidation of the bones was such that I left the limb at liberty in bed; the patient moved it about at his pleasure. I used the plank only in getting him out of bed. In short, I flattered myself that I should be able to make him walk upon crutches in a month or six weeks, but an event with which my operation had nothing to do deprived me of that satisfaction." Again, in Mülder's case the patient died of tetanus, after delivery; a result which cannot fairly be

ascribed to the particular operation executed. Every practical surgeon is aware that it may supervene after amputation. To support this view, I may here mention that Samuel Cooper gives a case where it came on after amputation of the thigh. And it may not be known to some, that the melancholy death of the late Earl of Darnley was from tetanus, consequent on having accidentally chopped off two of his toes with an axe. In some habits, a simple incised wound may give rise to tetanus. Cooper states that, "in St. Bartholomew's Hospital it once followed the operation of removing the breast." It likewise has been known to occur after the operation for hernia, and that required for ligaturing the larger arteries; these facts, then, forcibly substantiate the above view. After child-bearing it occasionally comes on; and to this cause, I think, we should attribute the death in Mülder's case^a. Sir Philip Crampton, in his remarks upon the first case in which he operated, admits that it "was one to which the operation of excision was not applicable." "The disease had proceeded too far; for even had it been possible to have removed the whole of the diseased bone, and that union had taken place between the femur and the tibia, the limb, from its shortness, would have been useless. Add to this, that the highly scrofulous constitution of the patient, as evinced by the open sores on the hand, and ultimately by the disease of the lungs, was in the highest degree unfavourable to the restoration of the healthy action in the constitution and in the part which was essential to the reunion of the bones^b." Why excision was ever performed in this case I cannot conceive; a faulty diagnosis might certainly have been made, but when once the bones were exposed, an opportunity was afforded of rectifying the error by amputation. "For the extent of more than three inches above the condyles the femur was without periosteum, the purulent matter lying in contact with the naked bone." And when, upon the saw being applied, and the section completed, here "the cancelli of the cut surface of the femur were disceded and filled with pus, and the periosteum posteriorly detached from the bone, requiring an inch and a quarter more of the femur to be cut off." Thus six inches of the femur were taken away, together with the articulating surface of the tibia, and "about half an inch

^a We are indebted to Professor Simpson of Edinburgh for a most valuable paper on Tetanus following Lesions of the Uterus, Abortion, and Parturition (Edinburgh Monthly Journal of Medical Science, February, 1854, p. 97). From a series of twenty-four cases, Dr. Simpson proves that traumatic tetanus does occasionally supervene as a secondary obstetrical disease.

^b Dublin Hospital Reports, vol. iv. p. 202.

of the head of the tibia, the cancelli of which were loaded with lardaceous matter and with pus." Every surgeon, I think, will agree with Sir Philip Crampton, that "the case was one to which the operation of excision was not applicable."

Mr. Syme was the first surgeon who excised the knee-joint at the tender age of childhood. I think it very questionable how far the fatal issue in his second case should be ascribed to the operation of excision. The surgery of the case is imperfect and bad; for *after* the operation the limb was not placed in proper position, and the child was subjected to additional violence in eleven days after the first operation. "On the 6th of January," writes Mr. Syme, "in order to prevent displacement of the bones, which all our efforts had been insufficient to effect completely, I cut away about two inches of the femur with the pliers, and then observed, with much concern, that the bone was denuded beyond the farthest extent to which my finger could reach. The patient began to sink soon afterwards, and died on the 8th^a." The result here might have been anticipated; for it was scarcely to be presumed that while the child lay prostrated by the fever of one severe operation, she could, with impunity, bear a second. I must leave the reader to judge whether this protracted and imperfect operation is a fair exposition of excision of the knee-joint as practised in the present day. From this period (1830) up to the year 1850 I cannot find any notice of excision of the knee having been performed. It remained for Mr. Fergusson, to whom our profession is so deeply indebted, to revive the operation in London at the latter date. Immediately after, he was followed by other able surgeons, and most conspicuously prominent must for ever stand the names of Jones of Jersey, and Mackenzie of Edinburgh, as identified with this subject. The former is still spared to labour in his glorious calling, while, alas! the latter has been taken from amongst us by the pestilence that sweepeth abroad. It will be in the remembrance of many, that last year, shortly after our armies proceeded to the East, Mackenzie quickly followed, leaving a very extensive practice in Edinburgh. At this time his reputation as an able surgeon was fully established, so it was not to attain this title that he went abroad; no, the act was in consonance with his whole professional career,—*an ever straining after truth actuated him.* There were some surgical points which he laboured to establish, and for the expectant fulfilment of these he relinquished everything else. Although broken down in health, and weakened in body,

^a Syme on *Excision of Diseased Joints.* 1831, p. 139.

he did not return home, but advanced with the British army to the battle field, relieving the pangs and sufferings of those brave and wounded men by whom he was surrounded, and who exulted in his presence. In this act we have forcibly portrayed the indomitable perseverance of his character; and Science may well mourn over her departed son.

The second period, then, in which I shall examine this operation of excision of the knee-joint includes all the cases occurring from 1850 up to the present time. And I shall endeavour to give a short summary of each, and as nearly in the order in which they occurred as possible.

CASE I.—Mr. Fergusson, on the 20th July, 1850, excised the knee-joint from a man aged twenty-one years. An H incision was made in front; one inch and three-quarters of the lower end of the femur, as well as the head of the tibia for about three-quarters of an inch, were sawn off from before backwards, and the sharp margins of the bones pared down with the forceps; the patella was cut out, and the flaps brought together by points of suture. The patient was under the influence of chloroform. On the third day severe rigors and high fever set in. On the seventh day some slight mitigation of suffering, but only temporary, for on the eighth day rigors came on again; the patient was bathed in cold perspiration; and on the following day he became delirious and sank. On examination after death, the bone seemed to be attacked with acute necrosis; the cancellated structure being full of pus; the tibia, for the distance of nearly two inches, was in the same condition.

CASE II.—On the 19th of January, 1851, Mr. Jones cut out the knee-joint; patient a female, aged 25. The H incision was adopted, and the patient placed under the influence of chloroform. The length of bone removed measured four inches. Mr. Mackenzie, writing in January, 1853, gives the following satisfactory account of her:—“ She is in perfect health, the parts about the knee having been long entirely healed. The shortening of the limb is a little over three inches. Complete ankylosis has not taken place, so that she requires a support on the inner side of the bone, with which she can move about freely, and can stand at her washing-tub for hours together. She is perfectly satisfied with her condition; and with a more secure support for the knee, which is being made for her at present, the limb will be rendered still much more serviceable than it was.”

CASE III.—On the 27th April, 1851, Mr. Jones operated on a boy aged eleven years. The extent of bone removed from the tibia and femur measured two inches and a quarter. This,

though at first appearing a very unpromising case, did admirably. The boy was emaciated and worn, and the leg was fixedly flexed on the thigh, so that the heel nearly touched the hip. Mr. Mackenzie examined this little patient in two years after, and then he appeared to be in perfect health. The limb was sound and whole, although numerous cicatrices gave ample evidence of the extent of the previous disease. Complete ankylosis had taken place at the seat of operation, the limb being a little bowed outwards, and slightly flexed at the knee. The shortening of the limb, when compared with the other, was under four inches; the muscles of the limb were well developed. He could walk and run quickly without any aid from a stick, could stand on the limb alone, and, to show his confidence in it as a support, he *pirouetted* and hopped two or three yards without putting the right leg to the ground.

CASE IV.—Mr. Jones resected the knee-joint in the case of a lady aged thirty years, September 4, 1851. Everything progressed most favourably for eight days, when diarrhoea came on, followed immediately by dysentery: no treatment pursued was able to check it, and she sank on the seventeenth, thirteen days after the operation. Mr. Jones states it as his conviction, that the operation was not the immediate cause of death; for he says at this time affections of the bowels prevailed everywhere, and much particularly in the vicinity where this lady resided; indeed, it was the epidemic of the day. The mortality at this period was very great, and very few persons laboured under or died of any other disease.

CASE V.—Mr. Page, of Carlisle, performed excision of the knee-joint, June 7th, 1852; patient a young lad, aged seventeen years. The patella, and two and a half inches of the femur and tibia were removed. At no time after the operation was there any important amount of constitutional disturbance. A year after, Mr. Page, writing to Mr. Mackenzie, gave the following interesting account:—“ He is now able to walk quite firmly, and without a stick, for a short distance, and is daily gaining greater control over the limb. He wears a shoe, the sole of which is about three inches thickened, that being the amount of shortening. The thigh and leg bones are firmly united, forming a firm and perfectly straight limb. The size in the situation of the excised joint is about that of the opposite knee.”

Again, we have reference to this case in March, 1854, made by Mr. Page in a letter to Mr. Mackenzie, and read before the Medico-Chirurgical Society of Edinburgh:—“ During the last year my patient has been able to walk with gradually increas-

ing facility; and when I lately saw him he told me that he had been for many weeks employed in a cotton factory, where he works as long as any of the other hands, and is obliged to stand or walk during the greater part of the day. He also said that on Sundays he not unfrequently walks six or seven miles into the country with his companions, and is able to walk with any of them. At the time I operated on this boy I was fearful lest the limb might not keep pace in growth afterwards with the rest of the body; but I am glad to find, by careful measurement, that there is now no greater shortness than at first, although the boy has grown considerably."

CASE VI.—Mr. Fergusson excised the joint from a female, aged twenty-one years, October 30, 1852, by an H-shaped incision. Chloroform was used. The condyles of the femur, and the head of the tibia and fibula, were sawn off, and the patella dissected out. In this case, Mr. Fergusson, considering the flap too long, "cut off about one inch and a half of it." The wound was closed with sutures, and large pieces of lint, damped in cold water, secured by a roller, were applied to the joint. The patient was placed in bed, the limb lying on a straight-channelled splint with foot-piece, being gently supported by Salter's swing, and so adjusted as to be somewhat raised. Considerable constitutional disturbance ensued, but subsided in a few days. Her convalescence was protracted by an attack of erysipelas; however, six months later, she was able to move freely about the ward on crutches, and her general health was good. Shortly after she resumed her employment, and was able to walk well without any artificial assistance."

CASE VII.—In January, 1852, Mr. Jones excised the knee-joint of a little boy aged seven years. The condition of the patient and of the limb was very similar to Mr. Jones' first case, the leg being fixedly flexed to the full extent on the thigh. Rather more than four inches of the femur and tibia were removed in the operation. Mr. Mackenzie represents the condition of this child in fifteen months after, as follows:—"The boy is in perfect health, the parts about the knee having been for long entirely healed. Complete ankylosis has taken place, the limb being slightly bent forwards at the knee; the limb is $2\frac{3}{4}$ inches shorter than its fellow. He stands equally securely on either foot, walks and runs quickly without any support; and to show me the use he could make of his limb, he ran up and down the ward, kicking his cap like football with the foot of the ankylosed limb." He was provided with a shoe, with a firm but light support under the sole, with which he walked steadily and easily, and with but a slight appearance of lameness.

CASE VIII.—In September, 1852, Mr. Jones excised the knee-joint of a man aged 20, previously to which the limb was flexed at an acute angle. Mr. Mackenzie saw this patient in April, 1853, and he mentions that he was then in good health. The parts about the knee were firmly cicatrized, with the exception of a superficial sinus, which still continued to discharge a little matter. All swelling had disappeared, and the limb, with the exception of this trifling sinus, appeared perfectly sound, and presented less trace of the operation which had been performed than I could have conceived possible. There was complete ankylosis in the straight position. The extent of shortening of the limb was rather under an inch and a quarter. He walked about the ward with crutches, the limb not yet having acquired sufficient strength to allow of his walking easily without support. He laid aside his crutches, however, and showed Mr. Mackenzie that he could walk without them, and with but a very slight halt. Mr. Mackenzie concludes by stating: “As far as I could judge, this case promises the most perfect result which can be reasonably expected after the removal of the patella and articulating ends of the tibia and fibula.”

CASE IX.—Mr. Mackenzie excised the left knee-joint for incurable disease of five years’ standing, February 5, 1853; patient a man aged 42. The operation was performed quite according to the plan of Moreau, the patella being first removed, then the condyles of the femur, and lastly, the articulating surface of the head of the tibia. On dividing the tibia with the saw, the cavities of two abscesses in the cancellated texture of the bone were laid open, each of a size capable of containing a grape; these were carefully removed with the gouge; the ends of the tibia and femur were placed in apposition, the wound brought together by suture; the limb steadied by applying a splint on its posterior surface. The extent of bone removed amounted to rather more than two inches, an inch and a half of the femur, and a little more than half an inch of the tibia. This patient, for several days, laboured under most distressing hiccough, unmitigated by all the remedies which were employed to relieve it, for six successive days and nights. The spasm of the diaphragm at length yielded on the seventh day, under the continued pressure of a seven pound weight over the epigastrium and the free use of Indian hemp. The wound, however, never presented during this time any very unfavourable appearance. Primary union had failed in the greater part of its extent, but the discharge was moderate, and the entire surface was covered by healthy granulations. Considerable difficulty, however, was experienced, from the unfavourable condition of

the patient, in keeping the bones in proper position, the end of the thigh-bone having a great tendency to project forwards and outwards. He was seized with troublesome diarrhoea, and attacked after by severe acute pleuro-pneumonia of the right side, extending over a large surface of the diaphragmatic pleura, yet he recovered all these; and during the time the limb progressed towards cure, slowly but steadily. In three months and a half after the operation his condition is represented as most satisfactory. His general health was restored, he ate and slept well, and had no complaint of uneasiness of any kind; confined to bed, as a matter of precaution more than necessity; wound healed, with the exception of a granulating surface on the outer side, about the size of the point of the finger. The bones at the knee are immovably fixed as regards lateral motion, but on using much force, slight motion backwards and forwards. Mr. Mackenzie observes, in conclusion:—"I think I do not mistate the case when I say, that the serious constitutional symptoms which presented themselves were wholly independent of the peculiarity of the operation, and that the patient survived, and made a good recovery, in spite of complications under which he must almost inevitably have sunk had he suffered amputation of the thigh."

In the Reports of the Medico-Chirurgical Society of Edinburgh^a I find the following satisfactory notice of this case:—"A patient, a man between forty and fifty years of age, was there exhibited, on whom Mr. Mackenzie had performed the operation of excision of the knee-joint a year previously. He appeared to be in robust health, and traversed the hall, in various directions, with ease and celerity. In walking, the toes were pointed downwards, but, his body yielding slightly, he planted the foot firmly on the ground, and rested his entire weight on the limb without uneasiness. In the horizontal posture he elevated and depressed it with the greatest nicety. On examination the limb was found slightly curved outwards, firmly ankylosed at the knee, three-quarters of an inch shorter than its fellow, and equal in muscular development. The heel of the shoe was raised inside three-fourths of an inch to allow for the shortening. He stated that he had been walking for six months."

CASE X.—Dr. Pritchard excised the left knee-joint from a man aged twenty years, March 16, 1853. Half an inch of the inferior extremity of the femur was taken away, and a thin slice of the tibia and fibula, merely the articular surface. An-

chylosis was established in six weeks, and at the end of three months the wounds were firmly cicatrized, with an absence of all pain, and the weight of the body could be borne upon the limb. Complete recovery subsequently followed.

CASE XI.—Mr. Evan Thomas performed resection of the knee-joint upon a boy, aged twelve years, on the 28th of March, 1853. “The articulating end of the femur was removed, and half an inch of the tibia. There was firm union in ten weeks, without a bad symptom.”

CASE XII.—On the 2nd of April, 1853, Mr. Fergusson excised the knee-joint of a woman, aged 28. The patient was placed under the influence of chloroform, and the H incision adopted. The lower extremity of the femur was sawed off just above the condyles, and about an inch of the upper part of the tibia removed by the horizontal action of the saw. When the lower extremity of the shaft of the femur was examined it was found that the periosteum came off very easily, and Mr. Fergusson thought it prudent to remove about an inch and a half of the denuded bone. The patella being eroded, was likewise taken away. This case terminated fatally, with all the symptoms of pyemia, sixteen days after the operation.

CASE XIII.—Mr. Jones excised the knee-joint of a boy, aged nine years, April 17, 1853. In this case the patella was not removed, its carious surface only having been taken away by the gouge. The head of the tibia and condyles of the femur were removed without division of either the tendinous or ligamentous attachments of the patella. Four days had only elapsed after the performance of the operation when Mr. Mackenzie saw this child, and then “he was suffering little or nothing.” But Mr. Jones, writing in four weeks after the operation, states, “the boy progresses most favourably, and gives promise of a still more satisfactory result than in any of his former cases.” We have, however, a very important and later statement of this case.

CASE XIV.—On the 5th of May, 1853, Mr. Mackenzie excised the knee-joint from a man, aged 28, by a semilunar incision, extending from the inner side of the inner condyle of the femur to a corresponding point over the condyle, the incision passing in front of the joint nearly as low as the tuberosity of the tibia; the flap thus formed was dissected back, the ligamentum patella being divided, and the patella itself left in the substance of the flap. The patella was left undisturbed, its cartilage being removed with the gouge, as well as the rough surface of bare bone around its articular margin. Three-fourths of an inch of the tibia, and fully an inch and a half of

the femur, were removed. "There has not been the slightest tendency to displacement of the bones from the straight position, a circumstance which I attribute in a considerable measure to the patella and its attachments being left undisturbed." In ten months after the operation Mr. Mackenzie, at the Medico-Chirurgical Society of Edinburgh, alluded to this case, and stated "that recovery from various causes proved more tedious than it had at first promised to be." The patient, however, progressed satisfactorily, though slowly, and Mr. Mackenzie had no fear as to the ultimate result. The limb was becoming rigid at the knee, and was straight, shapely, and but moderately shortened. He hoped at a future meeting to present this patient with a sound and serviceable limb. Having written to Edinburgh relative to this case, I have been informed that the patient was dismissed from hospital September 15, four months after the operation, and walked three miles in a few days after his discharge.

CASE XV.—Mr. Cotton excised the knee-joint of a boy, aged $9\frac{1}{2}$, for confirmed disease of three years' standing. The operation was performed October 5, 1853. The patient was put under the influence of chloroform, and the H incision adopted. The patella being diseased, was removed. The ends of the bones, which were carious and destitute of cartilage, being made to project by flexing the limb, the saw was applied to the femur, and a thin slice of its diseased surface was removed. The head of the tibia, which was much damaged, was treated in a similar manner; whilst that of the fibula, also involved, was excised with the cutting forceps. "On bringing the parts into contact, by extending the limb and correcting the eversion of the foot, the ends of the bones were found somewhat separated in front, but tightly wedged together posteriorly, the femur projecting considerably forwards. An additional slice of that bone was consequently cut with the saw, at a level angle, in a posterior direction; the soft parts and vessels being protected by a copper spatula, and the projecting edge in front was further bevelled off previously to adjusting the limb upon a ready prepared Macintyre's splint. On the 26th of December it is stated the patient "sat up, an immaterial ulcerating surface alone remaining on the outer side of the joint. He was directed not to amuse himself so frequently with flexing the knee upon the splint, to which habit attention had been directed. February 1, 1854. The splint had been dispensed with some days; he sat before the fire with the knee bent, and elevated the limb with ease. A high-heeled boot was supplied to compensate for moderate shortening. He was ordered to be allowed

to range the wards at will, as the constantly sitting posture seemed to cause a tendency to throw the end of the femur forwards." On July 26th his condition is thus described:—"The boy has occasionally presented himself at the hospital up to this time. He attends regularly at the village school, a distance from home. He walks firmly, and with tolerable speed, though with a stooping gait, which he is trying to correct, and which he thinks is owing to his having been obliged to sit so long a time at the hospital. The tendency forwards of the femur is strikingly lessened. There exists considerable power of flexion at the knee. The limb is equally developed with its fellow, and he is able to project it forwards or backwards with ease. Indeed, up to this period, the case, without exception, has been deemed one of a highly satisfactory character."

CASE XVI.—Mr. Gore, of Bath, excised the knee-joint from a boy, aged fourteen years, on the 31st of October, 1853. He had suffered from scrofulous disease of the knee-joint for about three years, the knee being enlarged to about the size of a moderately large melon. The patella was removed with a thin slice of the tibia, and upwards of an inch of the femur. The patient suffered singularly little constitutional disturbance or pain, with a very moderate amount of suppuration, and could not have been said to have had a bad symptom throughout. He remained in the house until the middle of January, though the wound had been all but closed for a month previously; his detention arising partly from a wish to insure firm bony union, and partly from the severity of the weather,—his home was in the country, some miles from Bath, and our roads (at this time), covered with snow. When he left the hospital the limb was quite firm, solid bony union having taken place. There was a moderate curvature with the convexity outwards. The apparent amount of shortening was about an inch and a half. He had not been permitted at that time to bear any weight on the limb; but on the bed he could raise it, and move it freely and boldly; the impression on the minds of all who saw him being, that he had a truly serviceable limb.

CASE XVII.—On the 26th of November, 1853, Mr. Keith, of Aberdeen, excised the knee-joint from a little boy, aged nine years, affected with incurable scrofulous disease. The leg was fixedly bent on the thigh at an acute angle, the heel almost touching the nates. The child being placed under chloroform, an incision was made from the inner to the outer condyle of the femur in a semicircular line, the point of the flap reaching to the head of the tibia, the ligamentum patellæ being then cut through. The flap, including the patella, was dissected from

all its connexions to a line fairly above the condyles; the lateral and crucial ligaments were cut, when the utmost facility presented for sawing off the condyles of the femur. The articulating surface of the tibia was then sawn off from behind forwards, the line of section not reaching so low as the fibula, two inches in whole being the exact measures of the two portions of bone removed at the operation. The surface of the patella was sliced off, and the remaining portion of the patella being evidently healthy, was allowed to rest in *situ*. The wound was closed by stitches, and the limb, extended straight without any difficulty, was laid and secured in a well-fitting Macintyre metal fracture frame. On Monday, the 10th of February, 1854 (the seventy-sixth day), the wound was firmly cicatrized, and the joint stiffened firmly by ankylosis; and on the eighty-second day he was daily going about. In an extract from a letter to Mr. Mackenzie from Dr. Keith, written about this time, and read at the Medico-Chirurgical Society of Edinburgh, "the patient was so firm on his feet, and so sound at the *ankylosed* joint, as no longer to require surgical care. The limb is straight as an arrow, and solid at the joint."

CASE XVIII.—Mr. Evan Thomas, of Manchester, excised the knee-joint from a boy, aged sixteen years, November 15, 1853. "About the same extent of bones removed as in his former case; the boy is still under treatment; there is firm union; inflammation of an erysipelatous kind came on a few days after operation; frightful suppuration followed amongst the sheaths of the thigh and leg." Mr. Thomas concludes by saying, "I hope the boy will eventually recover."

CASE XIX.—Mr. Mackenzie excised the knee-joint from a lad, aged eighteen years, December 24, 1853. Chloroform was given; at the time he was in a far advanced stage of hectic, emaciated, and much exhausted by continued suffering. He was most reluctant to submit to amputation; and having seen one of Mr. Mackenzie's patients walking about, upon whom the operation of excision of the knee-joint had been performed, he expressed an anxious wish that an attempt should be made to save the limb by the performance of this operation. Mr. Mackenzie looked upon it as a matter of regret that this request had been complied with; for although amputation held out but a small chance of recovery, the case was little suited to test the merits of the operation of excision. Immediate and great relief followed the operation, and, as far as the limb was concerned, everything had progressed as favourably as could have been wished. Diarrhoea, however, which had been threatened before the performance of the operation, set in; the tongue

and lips became covered with aphthous crusts; he suffered from cough and night-sweats, and sank in the course of a month after the operation. The wound was in a great part healed, and no difficulty had been experienced in keeping the limb in excellent position. Permission could not be obtained to examine the body; but Mr. Mackenzie had little doubt that tubercular disease of internal organs would have been found.

CASE XX.—Next in order comes the case in which I excised the knee-joint, January 20, 1854. I shall reserve it, however, to the last, being anxious to give all its details at full length.

CASE XXI.—Mr. Erichsen excised the knee-joint from a boy, aged seven years, February 15, 1854. The patient was rendered insensible by chloroform. A first incision was made an inch above the inner condyle of the femur, along the side of the joint, to about an inch below the patella; a second incision ran across the leg; and a third parallel to the first, on the other side of the joint; the flap, including the patella, was then raised, and the lower two inches of the femur removed with the saw. The upper portion of the tibia was sliced off, and a portion of the outer part gouged away; the under surface of the patella was likewise scraped, the hemorrhage being altogether very trifling.

CASE XXII.—Mr. Pemberton excised the knee-joint for strumous disease, from a boy, aged 12, on the 8th of February, 1854. The extent of the tibia and femur taken away amounted to three inches and a quarter; the patella was preserved; the wounds healed slowly but perfectly, and a firm cartilaginous union binds the bones together.

CASE XXIII.—Mr. Mackenzie excised the knee-joint of a boy, aged 12, April 15, 1854, for caries of the extremities of the femur and tibia. Chloroform was administered; the patient died twelve days after the operation. On post-mortem examination an ounce of purulent fluid was found in each pleura; numerous tubercular deposits were discovered in the apex of the left lung, and likewise a few at its base; in the intermediate portion of the organ, its structure was extensively disorganized, and readily broke down under the fingers. Miliary tubercles were scattered through the right lung, and at one spot, in the inferior lobe, there was a small cavity with sloughing walls.

CASE XXIV.—On the 17th of May, 1854, Mr. Keith excised the knee-joint from a boy, aged fourteen and a half years, of a very scrofulous diathesis, having numerous cicatrices of former strumous abscesses on both sides of his neck, both groins, and all around the ankle-joint of the right limb, the one from

which the knee-joint was excised. The limb was wasted, and fixedly bent at a right angle to the thigh; the knee-joint was greatly enlarged, tender to the touch, and incapable of being moved in any degree, the attempt causing much suffering. An abscess opened from it externally by two fistulous apertures at either side of the popliteal space. Under chloroform the joint was opened by the semilunar incision; one inch and five-eighths were sawn off the femur, and three-eighths of an inch from the tibia, making in the whole two inches of bone removed. The surface of the patella was pared and smoothed, and the degenerated synovial membrane dissected from the face of the flap. On September 9, one hundred and fifteenth day after the operation, he was dismissed from the hospital cured, the bones of the thigh and leg being firmly united by ankylosis. Numerous small abscesses were opened at different times through the treatment the moment pus was ascertained to be formed.

CASE XXV.—Dr. Stewart, of Belfast General Hospital, excised the knee-joint with, I believe, good results. Said to be "encouraging."

CASE XXVI.—In July, 1854, Mr. Jones, of Jersey, excised the knee-joint from a young woman, aged sixteen years. The patella was preserved, and its ligament not divided. The case is exceedingly interesting from the severe complication that accompanied it. Mr. Jones, in writing to me, November 6, 1854, says: "This case has given me infinite trouble, attributable to a cause I was perfectly ignorant of. It appears that the poor girl fell three weeks before the operation, and injured her back very much; this she kept entirely to herself, and only mentioned it to me some days after the operation. An examination showed me there existed an immense abscess in the lumbar region. I punctured it, and fully a quart of pus was discharged. Naturally this extra drain on the system, and the length of time it continued, materially weakened a frame already much exhausted, and, as a natural consequence, I had much to struggle with in the shape of sinuses, &c. My patient is, however, improving rapidly in health, and I now flatter myself she will recover and have a useful limb."

CASE XXVII.—On the 29th of July, 1854, Mr. Fergusson excised the knee-joint of a boy, aged ten years, who had suffered from chronic inflammation and disorganization of the articulation for several years. The H-shaped incision was made in front of the joint, and the flaps reflected; the condyles of the femur, and the articular surfaces of the tibia, were removed by the transverse section of a broad and short saw. After the soft parts had been carefully cleared away, the carious surface

of the patella was gouged away, and the remaining portion of the bone left. It was also found, when the operation was nearly completed, that the lower part of the shaft of the femur, close to the condyles just removed, was bare of periosteum, and Mr. Fergusson judged it prudent to remove the unprotected portion of bone to the extent of about an inch.

CASE XXVIII.—Mr. Holt excised the knee-joint, August 7, 1854, of a patient, a little boy, aged eight years. Two years before this period he had been struck on the left knee by a brick, and, with some occasional intervals of ease, had suffered to the period of his admission. The knee was greatly swollen; an opening existed in the popliteal space, through which caries of the lower part of the femur was detected. His health had suffered materially, and urgent constitutional symptoms demanded the removal of the part. Mr. Holt preferred excision, “as the growth of the patient, and the absence of organic mischief, led me to infer he would rally sufficiently for the after requirements of the operation.” “About three-quarters of an inch of the tibia and an inch of the femur were removed. The synovial membrane, which was degenerated into that pulpy character described by Sir B. Brodie, entirely dissected off.” After the removal of the bones the limb was placed in the straight position, in which it was maintained by the application of a straight splint.

CASE XXIX.—On the 26th of August, 1854, Mr. Statham excised the knee-joint from a young woman, aged 20. The operation was executed by lateral flaps, and the patella and its ligament not meddled with. About one inch of bone was removed, including that from the femur and tibia; two large sinuses existed, to which the dilute nitric acid was applied.

CASE XXX.—Mr. Henry Smith excised the knee-joint, October 18, 1854, of a patient, a boy, aged six years. The patient had disease of the knee-joint of twelve months' standing, together with abscess in the head of the tibia. Various and repeated endeavours had been made to cure the joint, and straighten the limb, which had become much flexed, but all in vain. The patient's health was much shaken, and even six months before the above date another surgeon condemned the limb to amputation. Mr. Smith, in writing to me, November 26, 1854, says: “I operated by making a large semilunar flap in front, and took away a good two inches of bone, more than I should have done had the abscess not existed in the head of the tibia. The patient had not a bad symptom. I did not touch the dressings for a week after the operation, and then found the wound nearly united.” “The little boy rapidly increased in

health. The limb has been kept perfectly straight; is now getting firm at the knee; there are one or two sinuses discharging moderately only. In little more than a month the patient was enabled to sit up on a sofa for several hours."

CASE XXXI.—Mr. Erichsen removed by excision the knee-joint of a boy, aged six years, October 11, 1854. The disease was of two years' standing. The tibia and patella were alone engaged; the former was extensively; an inch of the tibia was removed, and the articular surface of the patella gouged out; the articular end of the femur was quite sound, and not interfered with. The case progressed most favourably.

I shall now proceed to detail the particulars of my own case.

John Game, aged thirty-three years, by trade a shoemaker, was admitted into Mercer's Hospital, December 3, 1853, with incurable disease of the left knee-joint. The local affection was accompanied by a train of constitutional symptoms so severe, that at this time I urged the propriety of either excising the joint or amputating the limb. The proposition, however, would not be received by the man himself, or his friends, and he was immediately taken from the hospital. His case was lost sight of until January 12, 1854, when again he sought my opinion, consenting to undergo any operation that might be considered necessary. He was admitted into the house on the following morning.

From early childhood, through life up to advanced manhood, this individual, at different periods, had exacerbations of suffering in the diseased joint, sometimes so severe in character that on three different occasions amputation was proposed and rejected.

Here, then, at the very commencement we have a lesson of great value,—a lesson that teaches what powerful, continued, and repeated efforts nature makes to check disease, to arrest it in its progress, to save life.

The following is the history of the case. When a child, six years old, he strained his knee in leaping; he limped after the accident and was unable to walk or even stand upon the limb for nearly five weeks, during which time he was confined to bed, leeched, and unremittingly stuped. After this treatment all pain left the joint for nearly five years, which time having passed over, it occasionally came back, together with stiffness, but never to any serious degree. About this period he was bound apprentice to a shoemaker, and closely kept to work at his trade; after sitting for some hours he frequently

experienced unusual pain, which after rest would likewise pass away. When aged between 19 and 20, after taking some exercise, the pain violently returned; acute inflammation was set up, and that to such a pitch as to endanger life. He was taken into hospital and treated, but with little good effect for some days; the case progressing unfavourably, amputation was proposed. A few days passed over, and the propriety of the measure was more forcibly urged; the man took fright and returned home; by quietness and rest, counter-irritants, &c., all danger again passed away. During the ensuing twelve years he at different times experienced uneasiness and pain in the joint, while on two occasions the inflammatory symptoms ran so high, and the attendant fever assumed a type so severe, that amputation was supposed to afford the only access to safety and recovery. Yet here, too, all urgent symptoms passed away by the ordinary treatment of leeching, &c. So far for the restorative effects of nature, mildly assisted, exerted over one in whom life was maintained by a well-balanced action of the vital organs, and in which each organ duly performed its well-apportioned office. The foregoing details bring the patient's history up to January, 1853. At this time he was in the habit of carrying heavy buckets of offal to some animals which he fed at the rere of his house; while thus employed he slipped and missed his footing, and in the effort to recover himself violently wrenched the affected knee; after this he was perfectly lame, and confined to bed; all his former resources failed in checking the inflammation or alleviating pain. At this time, too, a most inclement season, with intense frost, set in, and to these combined influences he attributed the severity of the attack; the foot became oedematous, and numerous abscesses formed in the vicinity of the joint, particularly upon its outer and posterior surfaces, but did not break until the October following. After this he was worn out by suffering and compelled to come to hospital in December, when I first saw him, and from the type of the constitutional disturbance, the wasting hectic, urged the propriety of the operative measures adverted to.

As already stated, he could not be persuaded to submit, but after six weeks' additional suffering he gladly availed himself of the order to be placed under my care. On seeing him at this time I was very forcibly struck with his altered condition for the worse: he had become rapidly emaciated, and his countenance had a haggard, greasy look; the features sharpened. Pulse very frequent, not below 140, not hard or strong; great languor and sense of weakness; a bloodless, withered state of the skin, with burning sensation in the palms of the hands and

soles of the feet. He had constant restlessness, disturbed sleep, and total loss of appetite; night-sweats and irregular chills alternating frequently with diarrhoea. The local changes in and about the joint originating these symptoms were conspicuously developed: the thigh was wasted, while the leg did not at all participate to the same extent in this change. The leg was bent at a considerable angle with the thigh, and rigidly fixed in this position. On viewing the joint in front, the condyles of the femur lay very obliquely, the internal being far more prominent, sharp, irregular, than the external. The leg was partly rotated outwards, and drawn outwards and backwards. The patella was cast also somewhat outwards, and lay sunken obliquely, its inner edge being distinctly felt beneath the strained integuments; thus, the anterior configuration of the joint was remarkably distorted; pressure over any part of this region caused the greatest suffering. Though the leg could not be straightened, yet it admitted of slight rotation, sufficient to elicit distinct grating or crepitus, proving the destruction of inter-articular cartilages and those of incrustation, while the motion was sufficient to justify the conclusion, that the crucial ligaments were also destroyed. Numerous sinuses on the outside of the joint, and in the line of the outer hamstring tendons, testified to the fact of profuse suppuration implicating the softer tissues around, and on introducing a probe through the most dependent external sinus, it could, by a little manipulation, be passed into the joint and at once brought in contact with carious bone. The under surface of the external condyle of the femur communicated to the instrument the gritty feel as of a multitude of little fractures. On passing the probe forwards the patella afforded a similar evidence of being implicated, while no such proof presented of the tibia being engaged, after the most careful investigation. Through some of the many sinuses, projecting, red, fleshy papillæ appeared; while from all, flowed abundant secretion, varying, however, in consistence and colour: that from the infiltrated tissues being a consistent, yellowish fluid, suspending numerous flocculent particles; while on the other hand, that from the vicinity of the diseased bone was thin, sanguous, and fetid. The lower part of the shaft of the femur, for three inches above the condyles, was considerably thickened, which I attributed in a great measure to the repeated effusions of lymph in the proximity of the periosteum; suffice it to say, in no one point could the shaft of the bone be discovered softened, or stripped of its coverings. Taking these various points, then, into consideration, and having full evidence that the constitution proved itself no longer equal to the strug-

gle, I considered any further attempt to preserve the joint would only plunge the patient into so sunken a condition, that no mortal effort, no human skill nor science, could again recall the consolatory choice of operative interference for the sake of preserving life.

The minuteness with which the foregoing examination was conducted, leading to a very accurate and just estimation of the extent of disease, emboldened me in the propriety of the project of excising the joint. A few days were necessary to prepare the patient, and on January 20 I operated after the following manner.

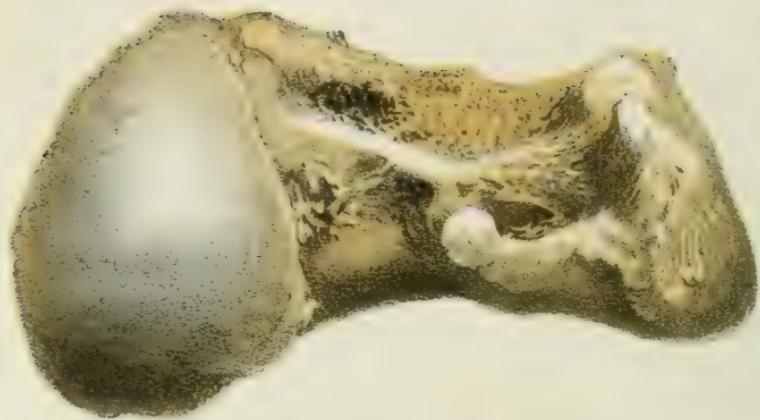
The patient was placed upon a table, lying on his back, and in a few minutes brought under the anæsthetic influence of chloroform. The leg at the extreme of extension was steadied; the sole of the foot being planted upon the table and held so forcibly, while the thigh was rigidly fixed by a second assistant. Standing on the left side of the patient, I leant over the knee, steadyng its outer side against my chest, and with a strong scalpel cut along the inner side of the joint to about the extent of five inches; this incision was commenced below, at a point about two inches lower than the articulating surface of the tibia, and corresponding to a line a little anterior to its inner sharp edge; the knife was at once thrust down to the bone, and, holding the same relationship, was carried upwards along the femur for three inches; the saphena vein was thus gradually left behind the track of the wound. A similar incision was rapidly made on the outside, commencing below the head of the fibula, and carried upwards above the external condyle; through the entire extent of this, too, the knife was swept along the bones. Both vertical incisions being completed, they were connected by a transverse one, passing an inch above the attachment of the ligamentum patellæ to the tibia; the latter wound opened the joint fully; the lower flap was freed downwards a short way, while that containing the patella was dissected upwards, but with some difficulty, owing to the thick matted cellulo-fibrous tissues which constituted its bulk. The internal and external lateral ligaments were next divided, together with adventitious bands, the result of organized lymph deposits; the anterior crucial ligament was destroyed, but the deeper fibres of the posterior remained intact, and incorporated by dense structure with the posterior ligament of the joint; these in turn were divided, but much difficulty was experienced in detaching them from the posterior surfaces of the bones, with due consideration for the popliteal vessels,

which not only lay upon the dense elastic material, but were embedded in it. The knife was next rapidly swept round the condyles of the femur, the disease not extending higher. In the same way the articulating end of the tibia was freed from the soft parts around its circumference; the ligamentous structures being thus cut through, the leg was forcibly flexed, and the ends of the bones thrust forward; and now the accuracy of the diagnosis was fully verified. The femur presented its external condyle nearly all removed by caries, while the internal was not at all so extensively diseased, its posterior half being stripped of its cartilage of incrustation, and carious behind the intervening space; between the condyles was likewise carious. The external condyle of the tibia had its cartilage of incrustation removed, which was replaced by a thick fibrous substitute, while the internal presented its normal appearance (we had here strong evidence of the efforts of nature to check disease). The patella was quite carious, hollowed, and reduced to a complete shell; therefore, it was dissected carefully out, the integuments in front, and covering it, being preserved together with the fibrous attachments implanted at its upper and lower edges. The bones being sufficiently exposed, I next proceeded to cut off their extremities, and for this purpose used the saw, which I prefer for amputations; its blade being turned in the supports and steadied so, it was easily passed behind the condyles of the femur and made to cut forwards; a few movements were sufficient to complete the section. In a similar way its serrated edge was placed behind the tibia, and urged forwards, so as to remove a thin osseous slice together with the surface of the bone. The head of the fibula was not diseased; lying below the surface of the tibia it did not prevent the apposition of the bones; it was, therefore, left intact for this special reason, as well as that the attachment of the biceps should not be interfered with. The entire amount of bone removed measured two inches.

Plate I.—Shows the condition of the surfaces of the bones, and the extent to which caries had progressed.

Plate II.—Exhibits the amount of bones removed, when placed *in situ* and apposition.

On closely examining the divided osseous surfaces, nothing could promise more favourably: that of the femur was compact and healthy in every respect, while the periosteum was adherent all around. That of the tibia preserved its natural spongy





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arrangement, free from all traces of disease. To the facility with which the bones were cut, and the peculiar adaptation of my saw to the purpose, I shall again advert. The hemorrhage was but trifling; three small arteries were secured. And I next proceeded to place the limb in position and dress the wound. The former was a matter of great difficulty; notwithstanding the relaxation arising from the shortening of the limb, it required considerable force to press back the bones so as to make them assume a horizontal position; this was entirely owing to the permanently rigid contraction of the flexor tendons. When the limb was pressed into the straight position, the cut ends of the tibia and femur lay closely in contact, but pressure could not be removed from the forepart of the limb for an instant, so great was the tendency to distortion. The upper and lower flaps were brought together by a few points of the interrupted suture; and the vertical incisions treated in a similar way, except opposite the line of section of the bones, where the edges were left apart to permit of the escape of any oozing of blood or serum, or of pus when formed; a few folds of lint wetted in cold water were then applied over the wounds, and the limb placed in the horizontal position in a wooden case which I had made for the purpose. The sides were attached to the back part by hinges, so as to allow of being let down at the time of dressing; they were likewise of unequal length, the internal extending nearly as high as the ramus of the pubis, while the external passed up to the axilla, similar to the long splint used by me in fractures of the thigh; the lower end of each lateral piece presented on the inner surface a number of grooves about an inch apart, so that when the sides were elevated the foot-board was received into any opposite pair of them, according to the distance required; this lower piece acted in two ways: not only did it maintain the foot at a right angle with the leg, but it steadied the sides and prevented their being pressed inwards from their vertical direction by the tapes and buckles which girted the apparatus on the outside. The box was supplied with hair cushions, carefully adapted to its entire extent, some being covered with oiled silk. In addition to the posterior, lateral, and foot support, a broad splint, well padded, had to be placed over the anterior surface of the thigh, extending from a little below Poupart's ligament as far as the junction of the upper and middle thirds of the leg, and secured firmly down by the surrounding web belts, so as to counteract the powerful tendency towards the distortion of the limb forwards. I have already mentioned that the external side of the

case passed up to the axilla, the object being to insure the straight position for the limb. It was kept in contact with the trunk by a wide girth passed around both. The patient expressed himself as being very comfortable with the limb done up in this way, and it was satisfactory to the surgeon to behold it, every requirement seemed so entirely fulfilled. During the operation and the straightening of the limb the man was kept under the influence of chloroform, and so perfectly did it act, that he was insensible to pain; true, a few minutes sufficed for the execution of both, but by this great boon to science, the most intense and excruciating agony was avoided, and the shock rendered nominal. On removing the handkerchief wetted with the chloroform from the face, the patient quickly recovered consciousness. The dressings being completed, he was removed to bed.

The bed was prepared in the following way: a hair mattress was laid over a feather bed, raised towards the feet; a blanket folded several times was placed over the part upon which the shoulders and hips rested; thus the returning circulation was favoured, and the chance of excoriation of the prominent parts of the buttocks guarded against. Four ounces of wine and forty minims of Battley's sedative were given; this was at 11 A. M. In half an hour reaction was considerably established, and bleeding took place from the lower angle of the inner wound; two stitches were cut out, and I succeeded in ligaturing the vessel that yielded blood,—an artery fully as large as the radial; there being no further flow, the stitches were replaced. From this procedure I was gratified with the construction of the wooden case, for I was enabled to let down its inner side and at once get at the bleeding part without disturbing the limb from its posterior support. The thigh was warm, but the leg and foot were very cold, so I had the entire wrapped in flannel and wadding, with hot jars placed close to the foot.

Visited 4 P. M. No return of bleeding; complains of great pain in the wound and startings of the limb; ordered forty minims of Battley, two ounces of wine, and a large cup of strong beef-tea.

8 P. M. Temperature of leg natural; pain less; forty drops of Battley with twenty of spiritus etheris nitrosi; and in an hour after, the yolk of two eggs, and two ounces of sherry and boiled milk.

Visited 11 P. M. Suffering great pain and startings in the limb; ordered forty minims of Battley, and if awake at 2 o'clock, to be repeated.

January 21, 9 A.M. An additional dose of Battley, thirty

minims, had to be given at 5 A. M., pain was so great. By the report of the gentleman who watched him through the night, he had no sleep, and was troubled with continued startings. Pulse was very rapid, that of irritation; great depression; suffering no pain in the limb; occasional startings and cramps; had to administer sedatives and stimulants in large quantities. He got in the fourteen hours 200 minims of Battley's sedative, eight ounces of wine, three ounces of brandy, each in divided doses; and for nutriment, six eggs, beaten up with brandy, and two large cups of beef-tea.

22nd. He has had no sleep since before the operation; his countenance is pale, lips bluish. Pulse 136, not so much that of irritation; irritation certainly subsiding; but the collapse is very great; tongue moist, but white; drew off with a catheter a pint of urine. The limb lies easy, yet occasional spasms in it; purulent matter is beginning to be secreted. The worst symptom present is the sense of sinking, accompanied by alarming prostration. It was quite clear that the only chance of prolonging life lay in the freest exhibition of wine and opium; they were administered with nutriment almost every hour in the fourteen following; during this period he took 225 minims of Battley, twenty-six ounces of sherry wine, eight eggs, and two pints of beef-tea.

23rd, 9 A. M. The large quantity of wine and opium swallowed has told so far. He is reported to have had sleep at intervals, now for the first time since the operation. The pulse has also come down ten beats, being only 126: it is also more full and steady. He is perfectly free from headache, and has emptied the bladder of his own accord. The limb lies easy; suppuration freely established; ligatures not producing tension or redness, therefore suffered to remain; complains of flatulence and pains in the colon, accompanied by slight nausea. Saw the long tube passed up the intestine to a considerable height, by it a large amount of air escaped; immediately a full enema of oil, turpentine, and hot water was administered, and after half an hour was returned together with full, solid discharges, and a quantity of highly fetid air. Removed the patient, supported in the horizontal position, and with great caution, to a fresh bed. In an hour after, the bowels were freed, he felt most comfortable, and took freely some toast and tea, all nausea and pain having disappeared. On this day diminished the opium, but increased the wine and food. In fourteen hours took 165 minims of Battley, sherry wine twenty-nine ounces, six eggs, two pints of beef-tea, and bread.

24th, 9 A. M. Is much better; slept through the entire night, and was free from restlessness and startings in the limb on going to sleep. Countenance *composed*; eyes bright, intelligent; no expression of suffering about the forehead or mouth, and feels himself "greatly refreshed from sleep." Pulse developed and steady, 120; respirations natural; temperature of body and limb natural; tongue clean and moist; full complement of urine secreted and passed; limb free from pain, not disturbed; opium and wine diminished; nourishment as before. In fourteen hours took Battley, 120 minims, sherry wine fourteen ounces, brandy two ounces.

25th, 9 A. M. Has slept well through the night; countenance quite cheerful; pulse 115, steady, soft, and compressible. On my visiting him, he was eating his breakfast with appetite. The startings in the limb have ceased; the knee is free from pain or tension; no erysipelatous blush or morbid heat; matter passing in abundance from the wounds at either side. In fourteen hours he took Battley, 90 minims, sherry wine fourteen ounces; nourishment increased.

26th, 9 A. M. Slept well; pulse 115; countenance cheerful; dressed the limb for the first time since the operation, six days having elapsed; great tendency to spasm and starting of the limb forwards; this was very remarkable when the splint in front and the lateral and side supports were loosened; the limb, however, was kept rigidly extended while the matter was pressed out from between the flaps, &c.; adjusted fresh pads; oiled-silk, with wadding under the limb to soak up discharge. This being accomplished, the anterior splint was applied, as before, to counteract the tendency to displacement forwards, and the case closed. Immediately after, the patient was removed to a fresh bed. In the fourteen hours he took Battley, 33 minims, sherry wine and food as on yesterday.

27th, 9 A. M. Had but little sleep, his bowels being moved four times in the night; however, the discharges were thick and consistent, and evidently dependent on the large amount of nutriment swallowed during the previous days. Pulse 115; limb free from startings; discharge from wounds free, but not re-dressed. His bowels having, in a few hours, being again affected, ordered an astringent mixture with opium. He took in fourteen hours Battley, 120 minims, port wine eight ounces, spirits, six ounces, rice, coffee, &c., as nourishment.

28th, 9 A. M. Had sleep at intervals; bowels not moved since yesterday morning; pulse 110, feeble, yet steady; tongue clean and moist; says he has had a cold sweat; countenance

pale. Dressed the limb, first letting down the side splints, while an assistant made pressure upon the forepart of the thigh to prevent its being drawn forwards; to resist the muscles doing so required great force. All matter being pressed out from beneath the flaps and sinuses, the limb was cleansed and done up as before. He took in fourteen hours Battley, 45 minims, wine six ounces, spirits eight ounces, eggs, chop, coffee, &c., for nourishment.

29th, 9 A. M. Slept all night; pulse 110, more volume in it, and quite steady; no cold sweats; tongue moist and clean; has had no startings in the limb; re-dressed it, carefully letting down the side splints, and supporting it in front; removed the stitches; flaps united through entire extent in front by adhesive inflammation; discharge from lateral wounds good, and moderate in quantity; in some points granulations springing up, florid and healthy; re-adjusted parts as before; removed the patient to a fresh bed, and placed him on a perforated pillow, as the integuments over the sacrum became reddened, from the constant pressure, owing to the one position being enforced; washed the surface over with a strong solution of nitrate of silver; opium not required now; ordered only 40 minims of Battley, to be given at night; wine, spirits, and food, as on yesterday.

February 2nd. Everything has been continued as at last report; going on most favourably; the limb has been dressed each day, the only change is in the profuse quantity of the discharge; used as dressing lint, soaked in a strong solution of tannin and sulphate of zinc, ten grains of each to the ounce of water; wine, spirits; diet, liberal, as before; no opium now.

4th. Is much better; wounds not discharging so freely; gave the joint considerable support by strapping its sides and forepart with soap-plaster, at the same time without disturbing the limb from its horizontal bed. The patient does not complain of starting in it now when left at rest; but the slackening of the splints instantly induces spasm, so that at each time of dressing the limb requires to be as forcibly pressed down as ever.

11th. Going on favourably in every respect; the strapping and support by pads afforded to the walls of the joint have diminished greatly the discharge, and lessened the secreting surfaces. Dressed with the same carefulness as from the first; no alteration in diet.

March 1st. Limb becoming quite solid. Ever since last report the limb has been dressed each day, and carefully strapped. Some small abscesses which formed at the incision were opened

and quickly obliterated. The discharge from the joint is very considerably diminished, and a firm union is being established between the tibia and femur; so far has the union advanced, that now all tendency to distortion of the lower end of the femur forwards has subsided. The patient is still, however, strictly confined to the recumbent posture.

April 2nd. Now the limb is quite rigid, and can be lifted from the bed *en masse*; the wounds are nearly healed, the chief amount of discharge being from the original sinus. Ever since last report the pressure over the sinuses and joint has been enforced by careful strapping with soap-plaster, in addition to the application of the mechanical apparatus, so as to prevent the slightest motion between the recently connected bones.

10th. Permitted the man to sit up in bed, supported by pillows, the limb remaining steadily fixed in the wooden case to enable him to do so. The prolonged, external side of the box was cut off; it perfectly fulfilled its office, but was no longer necessary.

May 10th. Removed the wooden case, and substituted side splints, a front support for the thigh, and a back piece; the external splint passed from the trochanter downwards below the foot; the internal one from the pubis to a like extent, while one lay in front of the thigh, and a fourth extended along the posterior surface of the limb, and as low down as the inferior third of the leg. All were supported by bandages, evenly rolled outside, while the joint was more immediately embraced both by adhesive straps and pads judiciously arranged over the sinuses. By this adjustment he was enabled for the first time to lie upon his side, and rest so, without detriment to the limb.

15th. Discharge so trifling, did not change the splints since last report. The man's general health remarkably improved; and the union between the bones is quite solid; readjusted as before.

June 10th. Discharge very small; not more than a teaspoonful from the inner wound; external wound healed; small discharge from an old sinus on the outer side; two have closed up altogether. The leg and thigh are firmly united together; so perfect is the union that I removed the heavy splints, and merely applied a light one to the posterior surface of the limb, extending along the thigh and upper third of the leg. The foot and leg were first evenly rolled, and then the splint placed behind, with a compress corresponding to the popliteal space. The sinuses were padded, and all retained by a roller passed from below upwards. This dressing afforded the greatest com-

fort, owing to its lightness. The patient was dressed, and permitted to lie upon the outside of the bed.

June 15th. The same mode of dressing as at last report adopted, and the patient was permitted to move about the ward assisted by crutches; this he could do very satisfactorily. The limb rested well upon the ground, was not more than two inches short,—in fact, a slipper with a thin pad in it made up for all deficiency in length.

July 10th. Still slight discharge from the site of one of the original sinuses, that upon the outside and lowest down; all others obliterated. Since last report the man has been moving about freely, assisted with crutches; the limb does not seem to have suffered at all by the motion; it remains rigidly ankylosed; however, he is not yet able to sustain the weight of the body upon it unassisted.

August 8th. A small abscess formed on the outside of the lower third of the thigh, and a second in front of the lower end of the femur; quiet to be observed; poultice and suitable dressings.

16th. Recent abscesses healed, while the original sinus externally still discharges. With the limb supported by the posterior splint the patient is able to move about as before.

20th. The joint is now free from all uneasiness, is perfectly firm, and the patient is able to go about with the assistance of one crutch. On the 5th of September he left the hospital in this condition.

The foregoing is a summary of the cases of which I have been able to find any record, or to gain any account of by inquiry; it is possible that some may have escaped my observation, if so, I trust the omission may be the cause of eliciting still further practical information on the matter. In the following Table will be found all the cases operated on from 1850 up to the present time: the name of the operator, the institution in which each operation was performed, the age and sex of the patient, the date of the operation, and the result as to life and limb.

TABLE of all the Cases operated on within the Second

Surgeon.	Hospitals.	Sex and Age of Patient.
Mr. Fergusson,	King's College Hospital, London,	Male, aged 21 years,
Mr. Jones,	Jersey Hospital,	Female, aged 25 , ,
Mr. Jones,	Jersey Hospital,	Male, aged 11 , ,
Mr. Jones,	Jersey Hospital,	Female, aged 30 , ,
Mr. Jones,	Jersey Hospital,	Male, aged 7 , ,
Mr. Page,	Cumberland Infirmary,	Male, aged 14 , ,
Mr. Jones,	Jersey Hospital,	Male, aged 20 , ,
Mr. Fergusson,	King's College Hospital, London,	Female, aged 21 , ,
Mr. Mackenzie,	Royal Infirmary, Edinburgh,	Male, aged 42 , ,
Dr. Pritchard,	Hunmanby Hospital, Yorkshire,	Male, aged 20 , ,
Mr. E. Thomas,	Manchester Workhouse Hospital,	Male, aged 12 , ,
Mr. Fergusson,	King's College Hospital, London,	Female, aged 28 , ,
Mr. Jones,	Jersey Hospital,	Male, aged 9 , ,
Mr. Mackenzie,	Royal Infirmary, Edinburgh,	Male, aged 28 , ,
Dr. Cotton,	West Norfolk Hospital,	Male, aged 9½ , ,
Mr. Gore,	Bath Hospital,	Male, aged 14 , ,
Mr. E. Thomas,	Manchester Workhouse Hospital,	Male, aged 16 , ,
Dr. Keith,	Royal Infirmary, Aberdeen,	Male, aged 9 , ,
Mr. Mackenzie,	Royal Infirmary, Edinburgh,	Male, aged 18 , ,
Dr. Stewart,	Belfast Hospital,	Male, aged 12 , ,
Mr. Butcher,	Mercer's Hospital, Dublin,	Male, aged 33 , ,
Mr. Erichsen,	University College Hospital, London,	Male, aged 7 , ,
Mr. Pemberton,	Birmingham General Hospital,	Male, aged 12 , ,
Mr. Mackenzie,	Royal Infirmary, Edinburgh,	Male, aged 12 , ,
Dr. Keith,	Royal Infirmary, Aberdeen,	Male, aged 14½ , ,
Mr. Jones,	Jersey Hospital,	Female, aged 16 , ,
Mr. Fergusson,	King's College Hospital, London,	Male, aged 10 , ,
Mr. Holt,	Westminster Hospital, London,	Male, aged 8 , ,
Mr. Statham,	University College Hospital, London,	Female, aged 20 , ,
Mr. Smith,	Westminster General Dispensary, London,	Male, aged 6 , ,
Mr. Erichsen,	University College Hospital, London,	Male, aged 6 , ,

Epoch, from July, 1850, to December, 1854, inclusive.

Date of Operation.	Result as to Life.	Condition of the Limb. Observations.
July 20, 1850, . . .	Death,	From operation.
January 19, 1851, . .	Cured,	With perfect use of the limb.
April 27, 1851, . . .	Cured,	With perfect use of the limb.
September 4, 1851, . .	Death,	From epidemic dysentery.
January 25, 1852, . .	Cured,	With perfect use of the limb.
June 7, 1852,	Cured,	With perfect use of the limb.
September, 1852, . . .	Cured,	With perfect use of the limb.
October 30, 1852, . .	Cured,	With perfect use of the limb.
February 5, 1853, . .	Cured,	With perfect use of the limb.
March 16, 1853, . . .	Cured,	With perfect use of the limb.
March 28, 1853, . . .	Cured,	With perfect use of the limb.
April 2, 1853,	Death,	From pyemia, sixteen days after the operation.
April 17, 1853,	Cured,	With perfect use of the limb.
May 5, 1853,	Cured,	With perfect use of the limb.
October 5, 1853, . . .	Cured,	With a limb most useful in progression.
October 31, 1853, . .	Cured,	With perfect use of the limb.
November 15, 1853, . .	Under treatment,	Recovery.
November 26, 1853, . .	Cured,	With perfect use of the limb.
December 24, 1853, . .	Death,	Twenty-four days after operation, from exhaustion consequent upon obstinate diarrhoea. Said to be "encouraging."
January 20, 1854, . . .	Cured,	With perfect use of the limb.
February 15, 1854, . .	Cured,	Perfect ankylosis. Use of the limb delayed by severe erysipelas.
February 8, 1854, . . .	Cured,	With perfect use of the limb.
April 15, 1854,	Death,	From phthisis, twelve days after the operation. Operation warranted to relieve agony.
May 17, 1854,	Cured,	With perfect use of the limb.
July, 1854,	Under treatment,	Recovering rapidly.
July 29, 1854,	Under treatment,	Recovering rapidly.
August 7, 1854,	Rapidly recovering,	After six weeks, bones ankylosed.
August 28, 1854, . . .	Rapidly recovering,	Union between the bones complete.
October 18, 1854, . . .	Rapidly recovering,	Union between the bones far advanced.
October 11, 1854, . . .	Rapidly recovering,	Good ankylosis; nearly quite firm.

The results from the foregoing statistics, as summed up in this Table, are most startling: thirty-one operations are recorded; out of this number five have died: but, as we dealt with the former Table, the details of by-gone days, even so must we deal with this, the record of modern surgery, and in the same way scrutinize closely how far these deaths are to be attributed to the special operation executed. Exception, I think, may justly be taken to Mr. Jones' third case, and the death fairly ascribed to the epidemic dysentery of the day, which at this time raged with such fatality "that few persons laboured under or died of any other disease." Again, Mr. Fergusson's third case died from pyemia sixteen days after the operation. Every experienced surgeon is well acquainted with the fact, that after comparatively trifling operations, after the simplest amputation, pus may enter the circulation and destroy life. In illustration: very recently, in Mercer's Hospital I amputated the fore-arm by double flap; a few seconds completed the task; the patient was healthy in every internal organ, and protected from any shock by the anæsthetic influence of chloroform. The case progressed most favourably, as was to have been anticipated, but this happy state lasted only some days, for soon a violent diarrhoea and shivering fit preceded the local change of a diffused inflammatory blush, an engorged and puffed condition of the wound,—tremblings and irregular shivering fits, with chattering of the teeth, contracted limbs with a morbid diminution of temperature, laboured and hurried breathing, with a small, soft, rapid pulse, at once awakened alarm in my mind as to the fatal blood-poisoning; the sunken, haggard countenance, the leaden hue, the hollow eyes, the contracted features; and later, the withered flabby aspect of the cut parts, exuding a grayish fetid discharge, attended with occasional delirium; rapidly accelerated and deeply laboured respirations alternating with expirations loaded with purulent fetor, confirmed the opinion; while, on the thirteenth day preceding death, constant sharp screams escaped from the sufferer, shrill, ringing, unearthly. At this time the eyes had lost all their brightness; the corneæ were opaque, lids apart; the lips and teeth covered with a fuliginous paste; the limbs from time to time agitated by subsultus; and later, a deeper, a more prolonged struggle terminated in death. Post-mortem examination revealed what the symptoms had so clearly portrayed, —pyemia, the cause of death. The death in Mr. Mackenzie's third case is not to be laid down to the particular operation; so far as the condition of the limb went, all was most satisfactory,

when violent diarrhœa attacked the patient, which proved fatal on the twenty-fourth day. Mr. Mackenzie's fourth case would have died whether operated on or not; certainly the rapid death cannot be ascribed to the particular operation performed. Far be it from me to throw even the semblance of censure upon one of such admitted ability; of course, from the physical signs on examination, this accomplished surgeon was perfectly conversant with the diseased condition of the thoracic viscera, and most likely removed the joint, the cause of excruciating suffering, of intolerable agony, on the same principle that amputation is justifiably performed even in cases hopeless as to ultimate recovery. Thus, then, out of 31 operations, 25 have recovered, out of which 17 are walking about with perfect use of the limb; 6 have been operated on since August last; yet in 4 of these union between the bones is already accomplished, and the remaining 2 are rapidly recovering. One case, operated on in November, 1853, is still under treatment, from numerous complications having arisen, and 1 is said to be "encouraging;" 1 has died from epidemic dysentery; 1 from pyemia; 1 from obstinate diarrhœa; 1 from phthisis, twelve days after the operation was performed to mitigate excessive agony; and 1 from the immediate effects of the operation.

Mr. Fergusson may well look with satisfaction upon this array of successful cases, and feel an innate pride at having revived an operation unwisely rejected, yet now productive of such splendid results. From these data we have sufficient evidence to prove that the operation is not so dangerous to life as had been heretofore supposed; and, above all, as contrasted with amputation of the thigh, either for injury or disease, it is far and away less hazardous. I shall transcribe from Mr. Erichsen's valuable work on *Surgery* a Table showing the mortality resulting from amputation of the thigh, performed for injury and disease, as noted in University College Hospital.

Result of Amputation of the Thigh from Injury and Disease.

	No. of Cases.	Cured.	Died.	Mortality per Cent.
No. 1.—Injury, . . .	19	8	11	58
No. 2.—Disease, . . .	34	27	7	20 $\frac{1}{2}$
			2	

Malgaigne's statistics from the Parisian Hospitals make the mortality far greater, viz.:-

	No. of Cases.	Died.	Mortality per Cent.
No. 1.—Injury,	46	34	75
No. 2.—Disease,	153	92	60

While Mr. Syme, in advocating amputation at the knee-joint^a, still further proclaims the mortality of amputations of the thigh, and in these words: "The stern evidence of hospital statistics still shows, that the average frequency of death is not less than from 50 to 70 per cent., while it cannot be denied that many of the survivors suffer from uneasiness connected with protrusion of the bone."

By some it may be said that a fair estimate cannot be drawn from tabular statistics, because that many of the amputations were performed in hopeless cases; true to a certain extent the objection maintains, but it must be admitted that in far milder cases, when the joint could not be cured by ordinary means, success swells the favourable return for amputation; while excision would not only have preserved the life, but also, with judicious management, the limb in a serviceable condition. These Tables, when contrasted with my second, upon excision of the joint, set at rest for ever the question of the comparative danger of the two operations. In them we have forcibly demonstrated that *the danger of excision is considerably less than that attending amputation of the thigh.* The wound necessary for the removal of the diseased bones is less extensive than that attending amputation of the thigh, whether performed by the circular or flap operation. This I have over and over proved upon the dead body. On this point Mr. Syme has two statements, one to suit the favourable view of the operation which he took when writing in 1831, and another to suit a special purpose,—to put down a rival,—in 1853. At the former period he mentions: "The operation requires comparatively small superficial incisions"^b; and at the latter: "The large size of the wound, just double that of amputation"^c. Mr. Fergusson, however, is very explicit on this matter^d: "He would repeat

^a Edinburgh Monthly Journal, May, 1845.

^b Syme on Excision of Diseased Joints, p. 131.

^c Edinburgh Monthly Journal, July, 1853, p. 89.

^d Lancet, April 16, 1853, p. 368.

that he considered the extent of wounded surface larger in amputation than in excision." The main vessels and nerves of the limb are not divided in the operation, the parts involved in the incisions being principally the integuments and ligamentous apparatus of the joint. The medullary canal of the bone is not laid open (a point now laid much stress upon by Cruveilhier, and urged by Mr. Syme in advocating amputation at the knee and ankle-joint). The shock, which always attends to a greater or less degree the sudden removal of a large part of the body, is avoided. In connexion with this last remark I wish particularly to cite Mr. Syme's opinion: "Every one who has attended the Hotel Dieu must have remarked the frequency of death, or rather the rarity of recovery, after the removal of limbs in such circumstances (speaking of caries); and though the evil seldom goes to such an extent in other places, I am sure all practical surgeons must be familiar with it. It is also observed, that adult patients, who have suffered amputation for caries, often fall into bad health and die of dropsy, or some other chronic complaint, within a year or two after the operation. These bad effects seem referrible, with most probability, to the disturbance which is excited in the system by taking away a considerable part of the body"^a.

The next inquiry to be answered, and it is of the utmost importance, is in reference to the after-utility and seemliness of the limb; or, in other words, whether, if excision be performed and recovery take place, is the limb more slightly and useful than an artificial one. The above data are sufficiently comprehensive and incontrovertible to settle likewise this question, without it at all being necessary to revert to the cases included in the first epoch, terminated so abruptly by Mr. Syme's failure. But it may be necessary to add, in reference to both Park's and Crampton's cases, Mr. Syme has recently, in the spirit of facetious criticism, thus expressed himself: "Although the operation had been limited to cases favourable for recovery, a large portion of the patients, whose fate could be regarded as decided, had perished. In some cases there had been no osseous union, and in others ankylosis with miserable deformity. Thus, in Sir P. Crampton's only successful case, the famous one of Anne Lynch, who could walk the length of a day, it appeared, from the bones which were in the Lincoln's Inn Fields' Museum, that the tibia and os femoris were united at a right angle, so that the progressive motion must have been of a very rare and remarkable kind; while the subject of Mr. Park's never to be

^a On *Excision of Diseased Joints*, p. 15, *et seq.*

too frequently quoted case, probably made a better appearance climbing up the rigging of his ship, like the quadrumanous inhabitant of a tropical forest, than he would have done as a biped on terra firma^a. Mr. Syme's imaginative conception, as applied to Park's case, is contradicted by, and at variance with, the written facts; and, as relates to Sir P. Crampton's case, I shall make no observation, as the gentleman is still alive and capable of shielding himself. Even from Mr. Syme's showing, the specimen proves this much, that the bones at least are firmly knit together by a bony junction; and, doubtless, this union might have been effected in a straight position. That the usefulness and seemliness of the limb can be preserved, is indisputably proved by the united experience of numerous able surgeons, viz.:—

In Mr. Jones' first case the woman was able to follow her business as a laundress, and stand at a washing tub for hours together. In his second, the patient, a little boy, could walk, and even quickly, without any aid from a stick; he could stand on the limb alone; and, to show his confidence in it as a support, he pirouetted, and hopped two or three yards without putting his right leg to the ground. This was two years after the operation, and attested by Mr. Mackenzie. In Mr. Jones' fourth case, the patient, a little boy, stands equally secure on either foot; walks and runs quickly without any support; and, to show the use which he could make of this limb, he ran up and down the ward kicking his hat, like a football, with the foot of the ankylosed limb. This occurred fifteen months after the operation, and was witnessed by Mr. Mackenzie. In Mr. Jones' fifth case, at the end of six months, the patient, a young man, walked about the ward with crutches, the limb not having yet acquired sufficient strength to allow of his walking easily without support. He laid aside his crutches, however, and showed that he could walk without them. The truthfulness of this statement is attested by Mr. Mackenzie; but the satisfactory issue does not stop here, for we find that this patient was introduced to the inspection of the Medical Society of London on Saturday, November 19, 1853, by Mr. H. Smith, and the following is the gratifying report: "He walked up and down the room without any artificial appliance whatever, and was able to use his limb very extensively, it being perfectly straight, and only half an inch shorter than its fellow, so that it is not necessary for him to wear a high-heeled boot. The knee is ankylosed, there being hardly any move-

^a *Edinburgh Monthly Journal*, July, 1853, p. 90.

ment; the man is in perfect health, and stated that he had walked as far as six miles together, and is now enabled to carry on his occupation, which is that of a house-painter." Mr. Jones' sixth case, the patient, a little boy, was presented to the Medical Society of London, November 19, 1853, by Mr. H. Smith, seven months after the operation. The limb was quite straight, and there was perfect bony ankylosis at the knee. In this instance, however, the patella had not been removed, so that the boy had full power of lifting the limb, inasmuch as the attachment of the great extensor tendon was left. It was noticed that this little boy walked up the room with the aid of two sticks. This was explained by the existence of a circumstance which rendered the case very interesting. This was a dislocation of the hip of the opposite side, which had occurred spontaneously from disease some few weeks after the operation. Fortunately, however, the disease in the hip had become arrested, and the patient, although he ordinarily used two sticks, was enabled to walk resting upon the arm of another person. He was daily getting strength; and, doubtless, in time, would be able to progress with facility; and Mr. Smith very justly remarks, "if amputation of the thigh had been done, and he used a wooden leg, the dislocation of the hip on the other side would have prevented progression; the superiority, therefore, of excision of the knee-joint was doubly shown in this example." Nothing can be more fortunate than the issue of the case operated on by Mr. Page, of Carlisle, in June, 1852. Through his kindness I have received the following particulars:—

" *Carlisle, November 2, 1854.*

" **MY DEAR SIR**,—On receipt of your letter I sent for the lad, now nineteen years old, whose knee-joint I excised in June, 1852. I overtook him this morning on his way to the infirmary; he was walking without a stick, and was able to keep up with my horse, which was going at a walking pace, for several hundred yards. He has been, for the greater part of a year, employed at the steam-loom in a cotton factory, which obliges him to be standing or walking through the day; and he says he is able to do as much work, and to earn as much wages, as any one in the establishment. The limb looks quite healthy, and is perfectly straight, and the bones of the thigh and leg are firmly united together." Mr. Page concludes by saying: "I have not yet met with another case in which I have thought the operation altogether advisable, but I shall certainly resort to it again whenever a favourable opportunity may occur.—I am, dear Sir, yours faithfully, W. B. PAGE."

In Mr. Fergusson's second case we are informed, that after six months the young woman was able to move freely about the ward on crutches; and shortly after she resumed her employment, and was able to walk well without any artificial assistance. In Mr. Mackenzie's first case, operated on in February, 1853, we have evidence of the nicest medical surgery, conducting the patient safely through many complications,—obstinate hiccough, wasting diarrhoea; and, lastly, acute pleuro-pneumonia, extending over a large surface of the diaphragmatic pleura. We have the happy result of this case published in the Reports of the Medico-Chirurgical Society of Edinburgh^a. It is thus reported: "a patient, a man between forty and fifty years of age, was then exhibited, in whom Mr. Mackenzie had performed the operation of excision of the knee-joint a year previously. He appeared to be in robust health, and traversed the hall in various directions with ease and celerity. In walking, the toes were pointed downwards, but his body yielding slightly, he planted the foot firmly on the ground, and rested his entire weight on the limb, without uneasiness. In the horizontal posture he elevated and depressed it with the greatest nicety. On examination the limb was found slightly curved outwards, firmly ankylosed at the knee, three-quarters of an inch shorter than its fellow, and equal in muscular development. The heel of the shoe was raised inside three-fourths of an inch to allow for the shortening; he stated that he had been walking for six months."

In reference to Dr. Gore's case, operated on in October, 1853, I have just received the annexed gratifying intelligence: "The success of the case has been, and continues in all respects complete, both as regards the boy's health, and the use of the limb. He has long discontinued the use of a stick; the bony union is solid; he walks, runs, and plays, with more activity than other boys of his age."

From Mr. Keith, the able surgeon of Aberdeen, I have received the following communication, relative to the case of John Hay, on whom he performed excision of the knee-joint, November 26, 1853:—

"Aberdeen, 31st October, 1854.

"MY DEAR SIR,—I have pleasure in replying to your inquiries. John Hay is healthy and active on his legs as a cricket. I append a note to his case, herewith sent to you, which ought to satisfy any one. The following is the valuable termination

^a Association Medical Journal, March 10, 1854,

of the case: 'October 26, 1854.—He runs his mother's errands without staff or cane. The skin is as sound around the knee as on any part of his body; the joint firmly ankylosed; the limb plump and growing. His shoe-heel contains a wedge of cork $1\frac{1}{4}$ inch thick; with this he runs, seldom taking time to walk.'"

Mr. Holt, in his letter to me, dated October 31, mentions the important fact, in relation to the case operated on August 7, 1854: "At the expiration of six weeks the bones were ankylosed, and I have no doubt his (the boy's) case will be perfectly successful." The same satisfactory intelligence I have obtained through the politeness of Mr. Statham, in reference to the case in which he excised the knee-joint on the 26th of August. He thus expresses himself confident of success, in his letter to me, dated November 20: "I believe I can safely say that the union is complete, and that she will recover."

From Mr. Evan Thomas, of Manchester, I have received the following report, as to the condition of the boy upon whom he operated, March 28, 1853:—

" *Manchester, November 16, 1854.*

" The boy upon whom I first operated is in perfect health, and to see him walk you could only perceive that he had a stiff knee; there appears to be hardly any shortening of the limb."

In reference to the case operated upon by Dr. Cotton, Senior Surgeon to the West Norfolk Hospital, I have just obtained from that gentleman the following satisfactory account. I am the more pleased at this, because some very severe criticism has been bestowed upon it in the last November Number of the Edinburgh Medical and Surgical Journal (p. 796):—

" **MY DEAR SIR**,—I have much pleasure indeed in replying to your communication, and in assuring you that the report of knee resection, in Association Journal of August 4, gave anything rather than a coloured description of the progress and well-doing of the case. Beyond a gradually diminished power of *flexion* at the knee, almost now amounting to firm ankylosis, the patient, up to this time, November 17, 1854 (upwards of twelve months), has improved in general health and strength. He attends, a distance from home, a village school; walks with firmness, and runs with tolerable speed; but the gait continues somewhat stooping. The limb has become more developed, and equals its fellow, but retains the position represented erect in

the woodcut, in lieu of that of the sitting posture, which was permitted before the power of flexion of the knee became impaired."

Having written to Mr. Pemberton, Surgeon to the Birmingham General Hospital, relative to the present condition of the boy upon whom he operated in the February of the present year, I have, through his politeness, received the following satisfactory report, dated this 21st day of November, 1854:—"The boy walks about anywhere with the aid of a stick, a leather knee-cap, and a high-heeled shoe."

From Dr. Pritchard I have just obtained the following very satisfactory details relative to the patient upon whom he operated in March, 1853:—

"Hunmanby Scarboro', Yorkshire,
" November 21, 1854.

"The patient continues to follow his occupation in trade, and walks almost free from lameness; the only visible alteration from a natural gait is an inclination of the body to the opposite side on each pace or progression. To use his own expression, he never feels fatigued in that limb, but always tires, after a smart walk, in the sound leg; still he can manage a five-mile walk easily, and, he thinks, ten at a push."

Dr. Keith's second case, that operated on in May, 1854, has turned out equally as fortunate as his first.

In his letter to me, dated October 31, 1854, he states:—"On the ninety-ninth day he [the patient] walked; on the one hundred and fifteenth day he was dismissed cured. And yesterday, October 30, he walked to the hospital, a distance of nearly a mile, with a limb stiffly ankylosed, to show himself. He lifts the limb about with freedom, and that without the slightest uneasiness. While walking, he rests on the toes with confidence. The heel wants $2\frac{1}{4}$ inches to touch the ground when he stands erect, with the pelvis squared, showing the height of the heel which his boot requires to enable him to walk comfortably. The whole limb is plump, and he himself florid and healthy to look at. He has grown sensibly in weight and stoutness since the operation."

In reference to the two cases operated on by Mr. Erichsen, the distinguished Professor of University College, London, both have been successful.

In a letter which I have just received (December 9, 1854) through the courtesy of that gentleman, I am informed that the



patient operated on in February, 1854, "is now in excellent health, his *limb ankylosed*. A small sinus leads under the patella, but does not touch bone. The shortening amounts to about two inches. A very severe attack of erysipelas of the limb, brought on by the application of caustic to the sinus, has retarded the progress of the cure somewhat."

In relation to the boy operated on in October last, the same report states:—"There is a good ankylosis, nearly quite firm; the wounds healed, with the exception of a very small sinus. The child's health is greatly improved, whereas before he was emaciated and weak."

Having written to Mr. Fergusson, the distinguished Surgeon of London, relative to the boy in whose case he resected the knee-joint in July last, I have received the following important information:—

"**MY DEAR SIR,**—The boy from whom I removed the knee-joint by resection in July last is now in excellent health, and the limb is all that could be desired under the circumstances. The wound has long since healed; and although I have not yet permitted him to rest on the limb, he can move it in all directions freely,—the knee, of course, being stiff. My chief reason for not permitting a free use is that the ankylosis does not seem to have been perfect hitherto. The last time I saw him, about three months ago, it seemed all but complete. From all I can learn, it occurs to me that the proceeding is likely to be established in a great many instances wherein amputation would have been performed in earlier times, and with a much more satisfactory result. I, therefore, anticipate that my efforts in the cause of 'conservative surgery' will prove eminently successful in this instance.—Believe me, my dear Sir, yours, with great esteem, **WILLIAM FERGUSSON.**

"Richard Butcher, Esq., Dublin."

The following is the appearance and condition of the man upon whom I operated January 20 of the present year. Being anxious to have an accurate drawing of the man, I sent for him to come to the hospital on this day, 8th of December, 1854, and I shall now describe his condition^a:—He stands erect, without the slightest droop. From being an emaciated, worn creature, he has become large and fat, with the entire muscular system well developed. The sickly hue and haggard expression have left his face, and he now looks cheerful and happy. He

^a The accompanying lithograph represents the appearance of the patient at present.

feels in admirable health. On closely examining the limbs, the affected one has nearly recovered its dimensions and muscular tone, the thigh perfectly so; it preserves an accurate axis with the trunk, but is slightly straighter than the sound limb. The adapted surfaces of the tibia and femur are bound together by a rigid, permanent union; grown into each other, they are immovable and fixed. The motions of the limb, effected by the muscles of the hip, are very perfect. When in the horizontal posture, the patient can elevate, depress, rotate inwards or outwards the limb, with the greatest precision and accuracy; he possesses a like power in executing those movements either rapidly or slowly. Unsupported he can sustain the entire weight of his body upon the limb, unassisted by stick or cane. He can walk steadily with scarcely any perceptible halt, the limb being one solid piece. The amount of shortening is not very conspicuous, being two inches; it is not much greater than is absolutely necessary for the perfection of progression under the circumstances. A layer of cork beneath the heel, inside of his shoe, fully compensates for the loss, and conceals all deformity. The motions of the ankle-joint are perfectly preserved. It is true, that upon first making the attempt to walk, even for a short distance, he complained of uneasiness and feeling tired first in this joint, but never referred pain to the knee. This enfeebled condition of the ankle may be fairly ascribed to the maintenance of the limb in a constrained and straight position for such a length of time; it has been, however, only a temporary uneasiness, which gradual exercise and time have removed. The patient can now walk without any support; he plants the limb firmly upon the ground without being sensible of the slightest concussion, and feels confident and satisfied in its strength. On the day before yesterday he walked to the Park and about the grounds, a distance of over four miles, assisted by a walking-stick; and he assured me he was not in the least degree fatigued or the worse for it. Though the bones are grown into each other, yet I never permit the man to go out without an artificial support to the joint: a short splint placed behind, and steadied with a few turns of a roller, answers every purpose. It should be borne in mind, that only eleven months have elapsed since the operation was performed; and I consider half that number more, at least, necessary to pass over before immunity from bowing of the limb can be secured. One sinus still remains on the outer side of the limb above the united bones, discharging a thin, oily fluid; it is strictly confined to the soft parts, and limited to the sheath of the biceps muscle.

Ever since the man left the hospital, now nearly three months

ago, he has followed his trade as a shoemaker; and in this business the limb is of great service; for it is necessary to grasp the shoe between the thighs at their lower part so as to steady it for stitching. This he is perfectly enabled to accomplish by supporting the limb upon a form. Had the thigh been amputated, he says he could not have worked at his employment.

The portions of bone taken away in this case are truly represented of their full size; and the figure of the man as he stands *now*, eleven months after the operation, is most accurately depicted by the faithful pencil of Mr. Connolly. The bones and original drawings are in my possession.

From the foregoing details, the attested record of truthful, eminent surgeons, the usefulness of the limb must be admitted as perfectly adapted and adequate for progression. The question as to the seemliness of the member is, I think, as satisfactorily answered. In reference to both these deductions I can raise my voice powerfully in the affirmative.

The tediousness of the convalescence has been urged as an argument against the operation of excision. No doubt, this unquestionably detracts, in a limited degree, from the benefits of the measure; yet, upon attentive consideration, it will not be found to pertain as forcibly as might at first sight appear. In some of the cases recorded, the patient was able to walk as soon as he possibly could upon a wooden leg, if amputation of the thigh had been performed. Mr. Syme, in his work on *Excision of Diseased Joints*, states, in reference to the first case upon which he operated, "in the course of four weeks after the operation the wound was all but healed; and the limb, before the expiration of three months, had regained so much strength that the patient could make some use of it in walking" (p. 137). Again, Mr. Syme states at page 131:—"It ought here to be recollected, too, that though recovery from amputation of the thigh is usually completed in three or four weeks, it is generally *at least as many months* before the patient can rest the weight of his body on the face of the stump so as to use it in standing or walking." In reference to this point, I would sum up, in a few words, my own opinion:—The limb must be kept immovably fixed, by proper apparatus, for a length of time; but this necessarily does not imply confinement to bed and exclusion from being placed on a couch in the garden in fine weather. Neither does it, in the better classes, prohibit carriage exercise, agreeable society, &c. &c. In either grade the result in saving a serviceable limb will more than compensate for all the weariness and restrictions necessarily entailed. Ano-

ther objection has been brought forward against the operation of excision, and which demands grave consideration. It has been asserted, that where the operation is performed in early life, the growth of the limb has been checked, and, consequently, that the lower extremities do not keep pace with each other, and hence one becomes so disproportioned to the other as to be ultimately useless. The only existing proof of this which I can discover is in Mr. Syme's case. On this point he thus expresses himself in 1848, alluding to the child upon whom he operated seventeen years before:—"The knee-joint may be excised, but not with the effect of preserving a limb so useful as an artificial substitute after amputation of the thigh. I tried the operation, nearly twenty years ago, on a boy who recovered perfectly from it, and seemed at first to possess a limb little inferior to its fellow, except in so far as it was stiff at the knee. But in the course of time it was found that the growth of the two limbs was not equal, and that the one which had been the subject of operation gradually diminished in respective length, until it wanted several inches of reaching the ground when the patient stood erect"^a. It is well known that a number of experiments have been performed upon animals to show that bones do not grow when deprived of their heads. This Anthony White stated to be the case; but the results do not seem to confirm such a conclusion. While, on the other hand, we have a number of experiments on the lower animals to prove that a limb may continue to be useful even after the removal of the articulating extremities from one of the joints. Vermaudois excised the head of a femur in a dog; in the course of a few weeks the animal was found to have acquired some power over the injured limb, and ultimately could make free and strong use of it, though the shortening occasioned a limp in the walk. A similar result attended like parallel experiments made by Koeler and Wachter.

In order to account for the result as it happened to Mr. Syme, a solution is afforded by Mackenzie. "He thinks it is possible that it might be attributed in this instance to ankylosis not having taken place." There is no doubt that upon close examination it will be found that the bones were not placed in proper apposition until "after several unsuccessful attempts at the end of several days." Yet after all this "the patient could walk and run, though with a halt, without the constrained appearance of a person with an artificial leg." The report goes on to say: "The limb is stout and well nourished, and though

^a Contributions to the Pathology and Practice of Surgery, p. 225.

slightly bowed outwards, does not occasion any disagreeable deformity; it allows a slight degree of flexion and extension^a. To this mismanagement I conceive may be attributed, in a great measure, the blighted growth of the limb. The question may fairly be asked, is the growth of the upper extremity checked by excision of the elbow-joint? Surely, the numerous children who have undergone this operation at the age of six or seven, have not grown to adult age with the stunted arm and hand of little more than an infant. If so, Mr. Syme, as the luminary of the north, has left us in great darkness, though vaunting his "dozens of cases"^b. Yet he never alludes to such a sequence, which, if it ever occurred, surely could not have been overlooked by one of such penetrating acumen. Practically upon the growth of the limb, after excision of the knee-joint, we have now truthful, authentic information. It is distinctly stated by Mr. Page in the report of his case: "At the time I operated on this boy I was fearful lest a like misfortune should happen to him as that in Mr. Syme's case, where the patient was growing, and that the limb might not keep pace in growth afterwards with the rest of the body; but I am glad to find, by careful measurement, that there is now no greater shortness than at first, although the boy has grown considerably." In Mr. Keith's letter, which I have already referred to, we have additional evidence as to the growth of the limb after excision of the joint, in allusion to the case of John Hay, aged 9, operated on in November, 1853. He writes:—"October 26, 1854. He runs his mother's errands without staff or cane; the skin is sound around the knee as on any part of his body; the joint firmly ankylosed; the limb plump and *growing*; his shoe-heel contains a wedge of cork, $1\frac{1}{4}$ inch thick; with this he runs, seldom taking time to walk."

Having written a few days since to Mr. Jones, of Jersey, relative to this most interesting and important question, he faithfully assures me that the two boys, upon whom he operated in 1851 and 1852, are in perfect health, and able to walk miles without experiencing the least fatigue; and he concludes by saying: "It is my firm conviction that Mr. Syme's views are not correct upon the point you allude to;" and he corroborates his impression by the following demonstrative proof: "My last case (in 1853) must, in a great measure, set this point at rest. In this case I preserved the patella, and did not divide its ligament. The cure in this instance was most perfect, and

^a Syme on *Excision of Diseased Joints*, p. 131.

^b *On the Pathology and Practice of Surgery*, p. 247.

became so in a very short time. About three months ago symptoms of visceral disease came on, attended with diarrhoea, and a fortnight since my patient died. (This letter is dated November 6, 1854.) I have seldom had a more interesting post-mortem examination. There cannot be a doubt that, in this instance, the limb, from which the joint was excised, kept pace with the other in every respect. The leg and thigh were carefully measured after the operation, as also the former and latter on the sound side; and, after death, all the bones were compared, and with the most satisfactory result. I have now this specimen in my museum, and a most interesting one it is; there is solid bony union, and the specimen shows the immense advantage there is in preserving the patella and its ligament."

The most truthful statements ever recorded have met with some sceptics; and to such, in the present instance, I would say,—even suppose the limb is so much respectively shortened in after years,—the objection applies only to the operation being performed on children, and has nothing to do with the question of the propriety of excision in the adult.

In order that excision of the knee-joint may prove successful, it becomes imperative that the cases are carefully selected; by "successful" I imply not only the preservation of life, but also the saving of a limb, better than any artificial substitute, no matter how beautifully contrived. It is not applicable, for obvious reasons, where the bones entering into the articulation are very extensively diseased; for though I admit a better chance of preserving life would be secured by excision, even in this case, than by amputation, yet the member would be faulty as a means of progression; it would be short, and a useless appendage. I need scarcely make allusion to organic disease of the viscera as affording an insurmountable objection; but this applies, with equal force, to the non-propriety of amputation. In such a condition either operation becomes only justifiable to alleviate excruciating torture. I do not lay much stress upon the integuments being extremely disorganized, or think that such a state militates with any force against excision, for in numerous instances, after removing carious and dead bones, I have been forcibly struck by the remarkable rapidity with which the soft parts set up healthy action and recover themselves,—parts undermined and sinuous when relieved from irritation, and set at rest, become very amenable to simple management. It has been objected too, that after resection the discharge is very great, and runs the patient rapidly into hectic. No doubt the discharge from the divided surfaces is considerable,—may be profuse,—yet is healthy; it

is essential to the process of reparation, and diminishes day by day according to judicious management; it is not so with the ichorous discharge, created from the morbid action aroused by the presence of diseased and deadened bones, which, acting as the poisoning supply of the constitutional disturbance, seals the doom of the being, unless relieved by operative surgery. It should never be forgotten, that resection of the knee-joint is only advocated as a substitute for amputation, and not for the simple mode of incising the joint, to which practice Mr. Gay has recently directed the notice of the profession. If Mr. Gay will just consider this axiom, and read carefully the practical evidence which I have advanced from most able surgeons, he will perceive how premature, hasty, and incorrect is his statement, that resection "is not only a useless, but an unphilosophical mode of treatment for diseased joints"^a. Equally absurd is the opinion of Mayo, denouncing all excisions except that of the shoulder. In his *Outlines of Pathology* it is written: "Excision of the articular ends of bones, in joint diseases, leads me to speak with no approbation. I suspect, when it has been performed successfully, it has been performed before the degree of exhaustion which renders an operation decidedly necessary has arrived. Where an operation is clearly required, the constitution has generally no longer force enough to support the tedious process of restoration which follows excision; it is better, in my opinion, to wait till all chance of other cure has failed, and then to amputate." I shall merely refer to Park's case, or to the one upon which I operated, as given in detail, to afford a perfect refutation to this statement as applied to the knee.

The applicability of the operation of excision of the knee-joint to cases of recent accident, and gunshot wounds, will depend upon the extent, and be estimated by the amount of injury the soft parts, including the vessels and nerves, have sustained, as well as that inflicted upon the bones. The practical surgeon will be able to compute with accuracy, after careful examination of the parts, how far this method of preservative surgery can be put into practice, and trusted to with hopes of success.

Dr. Buck, of the New York Hospital, has applied this operation to a case of angular ankylosis of the knee. In Mott's edition of Velpeau's *Surgery* will be found a full account of the case in which this operation was successfully performed. In this country I do not think the experiment is likely to be

^a *Lancet*, November 22, 1851.

followed, even granting the condition of the patient to be such as Dr. Buck describes previous to his operation:—"Since his recovery from the effects of the injury the patient had enjoyed uninterrupted good health, and had been free from pain or tenderness in the knee. He had been accustomed to walk with one crutch, though sometimes he dispensed with it, and stooped to accommodate himself to the shortened condition of his limb."

Lest this opinion of mine should be considered hasty, I shall just append that of M. Bonnet of Lyons, quoted from his last great work^a. M. Bonnet, speaking particularly of the *cuneiform exsection* for angular ankylosis, says: "It is one of those operations which may be performed under the influence of those illusions which preoccupy the mind of every one who has invented a new operation; but no one, who is not seduced by the charm which clings around all new discoveries, would be willing to expose his patient to the consequences of a compound fracture, and consequently to loss of life, in order to shorten a limb already too short, and to substitute one deformity for another."

Various operative methods are advocated for exsection of the knee. Park performed a crucial incision, whose transverse branch, placed above the patella, would comprise the half of the circumference of the limb. After having divided the tendons of the extensor muscles of the leg, and turned back the four flaps, raised up the patella, made the section of the lateral ligaments, and divided through the articulation from before backwards, Park inserted a large knife along the posterior surface of the femur, in order to detach the soft parts from it, while taking care to avoid the popliteal vessels. Nothing now remained than to saw the bone above the condyles; the extremity of the tibia is afterwards exsected with the same precautions.

Mülder proceeded in like manner; only, after having cut through the thigh-bone, he bent the leg, by which the condyles were protruded, and then he sawed off the upper part of the shin and splint bones, having passed a spatula behind them.

Moreau recommends two lateral incisions, a little in front of the borders of the ham, which incisions he unites by dividing transversely the skin and ligaments below the patella, in such manner as to penetrate down to the articulation; afterwards he detaches from the posterior surface of the bone the soft parts which surround it, then dissects and raises up the quadrilateral flap circumscribed by the three first incisions, and afterwards performs the section of the femur with the same precautions

used in the process of Park. If the bones of the leg are also affected at the same time, the outer incision should be prolonged as far as the head of the fibula. Another is made upon the crest of the tibia, by which means we have two lower flaps, one on the inner, the other on the outer side, which flaps are to be dissected and turned down. The posterior surface of the tibia is then to be isolated from the vessels and nerves, as well as from the origin of the gastrocnemius; and finally, all the portions of the diseased bones are to be removed by means of the saw.

The process laid down by MM. Sanson and Begin is as follows:—They recommend, after half bending the leg, to make a transverse cut from one lateral ligament to the other, and to divide them and the ligament of the knee-cap at a stroke. The joint surfaces of the thigh and shin bone are then easily laid bare; and by continuing the cut, according to circumstances, along these bones, the joint surfaces of one or other bone may be protruded and easily sawn off.

Jaeger proceeds in like manner, making upon a transverse cut, nine inches long, which divides the ligament of the knee-cap and the lateral ligaments, two side cuts an inch long, of which each is distant about an inch from either end of the transverse cut.

The process of Mr. Syme differs from those above in more respects than one. The operator makes in front of the articulation two semilunar incisions, one above and the other below, which are united together on a line with the lateral ligaments and circumscribe a transverse ellipse, including the patella; he then excises this ellipse and the bone which is comprised within it, divides the ligaments, and opens into the articulation, and exsects in succession the diseased extremities of the femur and tibia.

Mr. Fergusson's directions for the performance of this operation are the following: "An incision between three and four inches should be made on each side of the joint opposite the lateral ligaments, and a third should be carried across the fore-part so as to unite the whole like the letter H. The ends of the lateral incisions should be at nearly equal distances above and below the articulation, and that in front should extend over the patella. This bone should now be detached by dividing the textures around it close to its margins, and the soft parts should then be dissected upwards and downwards to a sufficient extent to permit a thorough examination of the diseased bones. And to facilitate this, as well as the future stages of the operation, the lateral and crucial ligaments should be divided; the

saw, forceps, and gouge, must be used according to circumstances. The diseased portion of the femur may be first removed, and then the head of the tibia, and also the head of the fibula, should it be involved in the affection. In using the knife in the posterior part of the joint more care is required than in cutting deep into the elbow, for in dividing the crucial ligaments there is nothing between the instrument and the popliteal vessels but the posterior ligament and some cellular texture; in applying the saw, too, more care is required."

Mr. Jones at first selected Moreau's method of operating; but latterly, in addition, he not only saves the patella when practicable, as recommended first by Mackenzie, but also the ligamentum patellæ. The operation was performed by him on the 17th of April, 1853, after this mode: "A longitudinal incision was made on each side of the knee-joint, midway between the vasti and flexors of the leg, full five inches in extent, rather more than half the length was over the femur, and rather less than half over the tibia. These two cuts were down to the bones; they were connected by a transverse one just over the prominence of the tubercle of the tibia, care being taken to avoid cutting the ligamentum patellæ by this incision; the flap thus defined was reflected upwards, the patella, its ligament, and the joint, thereby exposed. The synovial capsule was cut through as far as it could be seen; the patella and its ligament were now drawn over the internal condyle, while the joint was kept extended. It was next forcibly flexed, the crucial ligaments, almost breaking in the act, only required a slight touch of the knife to divide them completely,—the articular surfaces of both bones were thus completely brought to view, and their ends sawn off. The patella (after the diseased portion had been gouged out) and its ligament were replaced as nearly as possible in their natural state." Mr. Jones, however, does not recommend this plan of operation as adapted to all cases of knee excision, but, continues,—" very far from it; there are cases in which it is altogether inadmissible; and I feel persuaded that whoever adheres to one mode only will often find himself wofully disappointed in the result"^a.

In Mr. Mackenzie's first case he performed the operation after Moreau's method; but in his second and subsequent operations he adopted another plan. In his second case he thus expresses himself:—"Having found the disadvantages of the H-shaped incision in my first case, I now exposed the interior of the joint by a semilunar incision, extending from the inner

^a *Medical Times and Gazette*, July, 1853, p. 11.

side of the inner condyle of the femur to a corresponding point over the outer condyle, the incision passing in front of the joint nearly as low as the tuberosity of the tibia; the flap thus formed was dissected back, the *ligamentum patellæ* being divided, and the patella itself left in the substance of the flap; the cartilage which remained on its surface was removed by the gouge, as well as the rough surface of bare bone around its articular margin." In every other essential particular the operation was conducted as after Moreau's plan.

The method which I have pursued, as will be seen by a reference to the case of Game, was very nearly in accordance with that recommended by Moreau. Each step of the proceeding has been carefully described and attached to the case. From various trials upon the dead body, I am convinced the joint can be very readily excised by the semilunar incision advocated by Mackenzie; and I would further add, every word which he has written in relation to this subject is truly correct, and becomes the more valuable now that he is no more.

I shall next lay stress upon some of the chief points prominent in the execution of this bold operation, as also the after management of the limb, and the best way of meeting and allaying the constitutional disturbance so frequently evoked after severe operative measures. The shock resulting from excision is said to be far greater than after amputation. In order to arrive at a correct conclusion upon this statement, it would be necessary to lay down the precise condition of the soft parts about the knee, the length of time the disease existed, the efforts at repair set up from time to time, &c. For by a reference to the foregoing cases it will be seen the facility with which in most instances the joint has been excised, while in others it proved to be a far more difficult and tedious measure. I do not think I would be dealing fairly with this subject unless I adverted to the great difficulties which Park encountered in his first case, though a bold, able, and dexterous operator,—it is the more necessary to do so, because all recent reports only extol the facility with which excision may be accomplished. I freely admit all this too; and without egotism may say I have as good use of my hands as most operating surgeons, yet in the case which I have given excision was by no means an easy measure. I merely wish to mention these facts, not to deter, but simply to put the surgeon upon his guard, so that he may fairly weigh all things before he sets about this operation. It is not out of place to mention again, that in the case which I cut, all the soft parts resisted the knife like Indian-rubber. Great difficulty was experienced in detaching the flaps from the bones:

all were matted together, particularly behind, so that extreme caution was required in liberating the bones in the vicinity of the popliteal vessels. I speak these things because I do not think they should be concealed. A like condition of parts may embarrass the young operator if he is not resolutely prepared. While, on the other hand, I might mention the operation performed by me was by no means a prolonged one: it was executed within four minutes, though the obstacles to its completion were very great.

Happily, the shock now not be so greatly estimated or dwelt upon. Chloroform protects the sufferer; and I certainly attribute much of the success which in latter days has attended this formidable operation to the beneficial agency of this potent medicine. In nearly all the cases which I have collected, it has been used; in every successful instance narrated it has been given. In the case upon which I operated, the man was reduced to the lowest state, and would almost to a certainty have sunk from the shock either after amputation or excision, yet by this powerful means all violent struggles were prevented, and, of course, the patient saved from subsequent exhaustion. How different this tranquil sleep from the writhing torture of the sufferer under a similar operation described by Sir Philip Crampton:—"The poor girl, who, in coming into the operating-room, exhibited the greatest fortitude, and even cheerfulness, on the instant that the knife was applied to the skin became so ungovernable that four strong assistants could with the utmost difficulty retain her upon the table. This necessarily prolonged the operation, and, no doubt, very much increased its severity. The removal of the divided extremity of the femur, which in the case of Connolly was effected with the utmost ease, in perhaps less than a minute, was here rendered a work of infinite difficulty and danger, as when the knife was passing between the popliteal artery and the bone, and actually in contact with the former, no entreaty could induce the poor girl, *whom terror seemed to have deprived of her reason*, to remain for one moment at rest; she struggled so violently with both limbs, that it was with a degree of labour and anxiety, such as I had never before experienced, that I at length succeeded in passing the edge of the knife round the condyles posteriorly, and thus detaching the divided extremity of the femur"^a.

I have enumerated various methods of operation recommended by the distinguished names attached to each. By incisions planned after either, the joint can be very readily reached

^a Dublin Hospital Reports, vol. iv. p. 205.

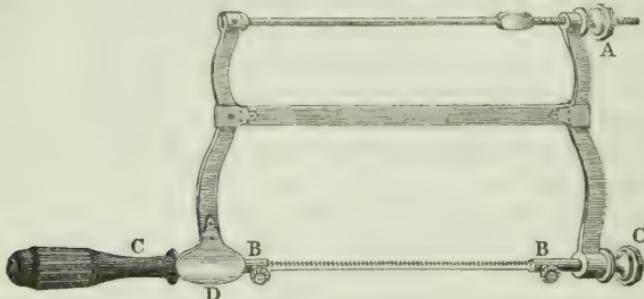
and exposed. I consider that in the selection of any, the wound must extend far back, to allow of the free discharge of matter, and the case to be operated on must not altogether be lost sight of, as some peculiarity may require special consideration. Generally speaking, the semilunar incision of Mackenzie will answer every purpose; while in others the H incision will offer greater facilities; but, in every instance, the patella should if possible be preserved, and whenever practicable, its ligaments undivided. Mr. Jones has insisted upon this, and with good reason, "preserving the patella, and not dividing its ligament, makes the operation more tedious and difficult; but this is a very secondary consideration when it results in obtaining a more favourable issue;" in the first case when he adopted this measure, "in less than seven weeks after the operation the patient was able to raise his foot without any assistance; while a young man who occupied the next bed, and in whose case everything had gone on favourably, was only able to do so in as many months"^a.

Amongst the many modes of incising the soft parts which I have mentioned, there is not one to which exception can fairly be taken except that of Mr. Syme. He advises an elliptical piece to be cut from the anterior wall of the joint, included in the arms of the ellipse the patella. I do not for a moment doubt the propriety of removing the bone *when diseased*; but I know no condition that can warrant the cutting away of the flaps; if they are in a perfectly healthy state they will not be found too great after a little time; they will adapt themselves by contraction to the altered state of the parts beneath: if they are perforated by sinuses, and present an appearance which by some may be called disease, they will recover themselves after the carious bones are removed, and not be found too extensive, but will constitute an accurate involucrum for the divided osseous surfaces. Again, such a proceeding would be totally at variance with Mr. Mackenzie's improvement in the operation, the saving of the patella, and also with that of Jones, embracing not only the conservation of the bone, but likewise its ligamentous attachments.

Having so disposed of the soft parts, we next come to the division of the bones, the cutting of the diseased surfaces from the femur and tibia. The saw which I have used for this purpose is one to which I have before drawn the attention of the profession; during the last four years I have employed it in all amputations and resections, and am now far more satisfied

^a *Medical Times and Gazette*, July, 1853.

of its efficiency than ever; it is peculiarly adapted for resections. First I will present to the reader an accurate woodcut of the instrument, with its serrated edge turned outwards as used in resection.



I shall next digress for a moment in order to give a description of the instrument. The measurement of the full-sized saw is as follows:—The upright pieces are six inches high, half an inch wide, and two lines thick; the one remote from the handle is received into the transverse bar, and is movable; the depth of the blade is three lines, with the teeth well set off from each other, and inclined forwards; the length of the blade is six inches, with the sockets included eight inches and a half; the middle bar is half an inch deep and two lines thick; and the upper bar is rounded, with a screw at one end: (A, the nut applied to the screw, which makes tense the blade; BB, the pins that secure the blade in the sockets; cc, the handle and nut, by turning which the blade is rotated to any angle; D, the rest for the index finger; at present the blade stands turned, and fixed for excision; concealed by the finger rest, on the opposite side is a small screw which prevents the rotation of the blade). The instrument for capital operations I have had made of the above proportions, but it is also executed on a smaller scale for minor operations. The advantages which I conceive this saw possesses over every other are the following: from the extreme shallowness of the blade it readily cuts in a curve, if required; and from its slender proportions it can be easily slipped under the flaps, and used without bruising them, or catching in the retractor. No matter how unsteadily or unevenly the limb is supported and held by the assistant, the saw cannot be locked; the thin, shallow back, the fine setting of the teeth, the mode in which they project to either side, all contribute to prevent the possibility of such an occurrence, for a perpendicular section of the blade shows it to preserve a triangular form, the base below, therefore, the

instrument must work freely in the groove which it has made. It cuts more evenly than any other saw, and the bones cannot be splintered by it, consequences resulting from the fineness of its setting, and the lightness of the instrument; and lastly, it cuts more rapidly than any other saw, owing to the extreme tension of the blade, produced by acting on the screw in connexion with the upper bar of the instrument; the effect being perfected in a very material manner by the mode in which the blade is riveted in a direct line with the teeth. This instrument will be found most useful in all resections, for, by relaxing the screw above, the sockets in which the blade is lodged are permitted to rotate, so that the teeth may be directed outwards, as seen in the woodcut; while, by unscrewing the pin, marked **B**, the blade is readily detached, and being sharp at the point, is easily passed behind the bone (an arrangement necessary, if there is no breach of continuity), with its edge applied to it, or at any angle required; the blade is again fastened at **B**, and when made tense, a few movements of the instrument will readily sever the bone from within outwards. Again, owing to the facility it affords in cutting curves, it is well adapted for removing exostoses, cutting out the great trochanter, &c. But to return to the subject, this saw is peculiarly applicable to resection of joints. In these cases I conceive it is far better in the first instance to separate the bones from each other before they are sawn: by this method the entire proceeding can be accomplished with greater facility, and with less danger to the vessels than when they are left undivided. When the portions to be removed are sufficiently freed from the soft parts, the fine blade of the instrument is placed behind the bone, its serrated edge in contact with it, and held firmly so; then, by a few sawing movements, the instrument cuts its way outwards, rapidly dividing the part. If the surgeon prefers not separating the bones previous to cutting them, then, I say, the saw is equally applicable, for he can detach the sharp end of the blade, and after passing it behind the bone, make it fast again, and with the same facility effect his purpose. The thinnest shell of bone may be removed by this instrument with the same evenness and precision as a larger section. This is strikingly illustrated in the portions which I cut off from the tibia and femur in the case of Game. I have very recently employed this saw with like satisfaction in a case of excision of the elbow-joint, when it equally answered every purpose.

After any of these methods of operation the hemorrhage is very trifling; of course, if a vessel of magnitude springs, it must be secured by ligature.

Immediately after excision of the joint is accomplished, before the patient has been taken from the operating table, the limb should be placed in the extended position, and retained so immovably in a solid case, such as I have described. In some instances it has been shown that the difficulty to force back the femur, and prevent its projecting in front, has been very great; by proper manipulation this difficulty can be overcome, without violence, by one or either of the following measures. Generally speaking, this, the milder method, will succeed: when the ends of the bones are cut away, gradual, yet powerful extension, continued for ten or fifteen minutes, and longer if necessary, should be made upon the leg, so as to counteract, tire out, and subdue, the violent contraction of the hamstring muscles. During this manœuvre the thigh should be gently, yet steadily, pressed backwards, so that the cut surfaces of the bones may be opposed to each other, and then, being pressed back into a straight line, and retained so by proper supports, they offer mechanical resistance to each other, and thus displacement is prevented; but if this method fails,—and it will most likely do so in those cases where the leg has been for a length of time flexed upon the thigh, and the muscles have assumed a spastic contraction of a settled character,—here I would most certainly recommend the surgeon to divide the hamstring tendons (in preference to cutting off another piece of the healthy bone). This becomes more imperative when the head of the fibula has not been removed, and the tendon of the biceps interfered with; it is the powerful and spasmodic action of these muscles dragging the leg upwards and backwards, that creates to a great extent the deformity, by the thrusting of the thigh bone forwards: by their division, then, not only is reduction easily secured, but all tendency to after displacement checked. The limb, I repeat it, should be secured from the very first in the extended position, and rigidly maintained so through the entire cure. In my mind the same arguments apply here as in the treatment of fractures of the thigh^a, the object of the surgeon being, in either case, to avert spasm, and to obtain as quickly as possible a permanent osseous union between the disunited bones.

Some operators contend that a slight degree of flexion and extension is desirable after excision of the knee-joint; to this opinion I cannot subscribe, for two reasons: first, because as a means of sustentation the limb would be found inadequate,

^a See my *Essay on Fractures of the Thigh Bone*, *Dublin Quarterly Journal of Medical Science*, February, 1853.

and not so sightly in appearance; secondly, the very motion perpetuated between these bones, already prone to carry on unhealthy action, would become an exciting cause for a renewed development of disease. No; I conceive, for perfection as a result of excision, the tibia and femur should be grown into each other and bound by callus; and, far better still, when the patella, deprived of its cartilage, and undisturbed from its berth in front, becomes fused into this connexion. A limb cured in this way will harmlessly endure the fatigues of travel. An objection has been made to uniting the limb in one solid piece, on the grounds of its liability to fracture being far greater than when some motion is permitted between the bones. My answer is, such a result has never taken place; and I am equally certain that the force requisite to break the callus union or limb in any part of its length would entail far more grave and serious mischief if applied to a limb enjoying partial motion; in the latter, the fibro-ligamentous structures would be all torn up from their connexions, and, as a sequence, high and active inflammation readily set up, followed by the rapid formation of matter, and all its train of fearful consequences. Even suppose this burst of mischief checked by energetic treatment, the danger would not be removed: a slow, insidious action would rouse up the latent disease, which in turn would prey upon the general health, until the only chance of preserving life would centre in amputation. Now, in the former case, no such dismal consequences present themselves; the fractured limb might be brought to its full length, and maintained so by the application of the long splint, until union be again accomplished.

The amount of success following all severe operative measures greatly depends upon the care and assiduity bestowed on the after treatment, both locally and constitutionally. Probably in the entire range of operative surgery there is no class of cases which demands such close and attentive looking after as that now under consideration. It will not be sufficient for the surgeon after he completes a severe resection, be it in ever so masterly a manner, to delegate his duties to another, and after he puts aside the knife to consider his part done. No; if he is desirous of success, he must use his own hands, and be the dresser; while by his watchful eye he will readily discover the early threatening of incipient mischief. After all severe surgical operations I am in the habit of employing stimulants and sedatives very freely, together with nutritious food apportioned to the assimilating powers of the individual. This treatment is most imperatively urgent where the patient is advanced in life and has endured lingering disease for a length of time.

It is, I would say, equally necessary to the infant and the child; whereas, in reference to the middle periods of life, the diminution or increase of supply must to a great extent rest upon the judgment of the practitioner. By the copious administration of stimulants the flagging powers of life are upheld; by the free exhibition of sedatives, pain and irritation and spasm are subdued. To how great an extent it may become necessary to press these measures is amply illustrated in the case which I have given in full detail. Here it was necessary absolutely to flood the patient with wine and opium, and in every way abundantly to supply nutritive aliment.

In the foregoing pages I have endeavoured to give an unbiased and candid exposition of all the facts bearing upon the important question of resection of the knee-joint,—a question of vital importance to the profession and to society at large. In doing so, I trust I have dispassionately considered the subject, and every contingency likely to arise. The important information afforded by numerous hospital surgeons, whose names are herein recorded, makes the mass of evidence brought to bear upon the subject all-convincing and conclusive. Not only are the ordinary details of the cases given, but likewise a continuous account of them afforded up to the present day, thereby creating a record sufficiently comprehensive towards refuting every objection, and establishing the operation of excision of the knee-joint upon the soundest principles of our art, upon the solid basis of truth.

In conclusion, I have only to add how deeply I feel indebted to those able men who so readily answered all my inquiries, and to thank them in the name of that noble profession under whose banners we have taken soldiership, and whose cause we have pledged ourselves to support and exalt.

ART. II.—*Pathological Affections and Relations of False Membranes^a.* By ROBERT LAW, M.D., Professor of the Institutes of Medicine in the School of Physic in Ireland, &c.

SEROUS membranes are pre-eminently susceptible of inflammation. They exhibit this susceptibility more strikingly than any other structure or tissue in the animal body, with, perhaps, the single exception of their kindred structure—areolar tissue. This fact is attested both by living and by posthumous

^a Read at a Meeting of the Association of the Fellows and Licentiates of the King and Queen's College of Physicians in Ireland.

proof, exhibited in the frequency with which the practical physician meets with cases of peritonitis, pleuritis, pericarditis, and arachnitis; and in the still greater frequency with which, in his post-mortem examinations, he finds unlooked-for traces of inflammation of this tissue, whose existence, in many instances, had never been suspected during life. Although pleuritis be a common disease, how infinitely more frequent are the pleural adhesions and other marks of inflammation of this membrane discovered after death! And how small is the proportion of cases of pericarditis with which the practitioner meets, however numerous they may be, when compared with the frequency with which he finds in his necroscopic examinations Baillie's white spot (*tâche laiteuse*) on the surface of the heart, a want of proportion so great as to cause the originally inflammatory character of this phenomenon to be questioned, but of which I have no doubt for the following reasons:—1st. Because, whenever it is present there are generally also to be found other evidences of a former inflammation having existed, such as cellular bands, of various lengths, connecting the opposite pericardial surfaces near the base of the heart, and which owe their continuance to the little motion to which this portion of the organ is subject. 2nd. The thickened, opaque appearance of this spot is exactly the same as that presented by other serous membranes which have been inflamed. 3rd. Although pericarditis does very often exhibit itself under characters so palpable and obvious as to bring it under the notice of the physician, experience warrants us in asserting that this is far from being always the case. I have found in my examinations of patients who have died of various diseases, complete obliteration of the cavity of the pericardium, the result of an old inflammation of whose existence they seemed not to have been aware, as, in the enumeration of their existing symptoms and former illnesses, they made no allusion to any cardiac affection. I have met with instances of pericarditis developing itself in the course of other diseases, some of which owed their detection, not to any symptoms that arrested the attention of the patient, but to the accidental application of the stethoscope, which discovered the friction-sound; while others were entirely overlooked, being obscured by the more prominent symptoms of the disease to which the pericarditis was super-added, and whose unsuspected existence examination after death alone revealed; and in not a few of these cases there was complete cohesion of the opposite pericardial surfaces through their entire extent. If, then, pericarditis, to such an extent as to produce a perfect obliteration of all the cavity of the peri-

cardium, can consist with such a degree of latency, it is not too much to suppose that so much of it as would be necessary to produce the white spot should be present, and still elude the notice both of the patient and physician, I would add, as a further reason for my belief of the inflammatory origin of this appearance, that the function of the organ entailing upon it incessant motion, and its organization, are both calculated to engender an inflammatory susceptibility at least equal to that of the pleura.

I assert, therefore, for serous membranes a peculiar proneness to inflammation, which is probably due to the low degree of vitality with which they are physiologically endued, exhibited in their comparative insensibility and deficient vascularity in their normal state. Serous membranes, when inflamed, pour out a fluid composed of serum and lymph or fibrine. The ordinary destination of the former is to be removed by absorption. This may be the case with the latter also, but its removal is never accomplished so speedily as that of the former. The friction-sound of pleuritis and pericarditis is heard long after the serum has been absorbed, and in many cases has to wait for its absorption for this phenomenon to be developed. The rough surfaces have hitherto been kept asunder by the interposed serous fluid. In some cases, after a much longer time, the disappearance of the friction-sound tells us that the fibrine has been removed, and that the surfaces have regained their normal smoothness. In other cases, however, the fibrine has a different destination; it is retained in the system, and becomes the seat of a process which has for its definite end to make it attain to, by a series of changes, a state in which it resembles either the parent structure or that which is most allied to it in organization, viz., cellular structure. I would here remark, that a pathological product never arrives at the perfection of the structure which produced it, but always takes an inferior or subordinate place in reference to its organization, and approaches more or less to the original structure according as it may be more or less required to fulfil the functions of this structure. We thus see, that while this product generally resembles cellular structure, if it should so happen that any two portions of it rub against each other, they lose their rough, flocculent, cellular character, and become smooth. I had an opportunity of observing this in a specimen taken from the body of a man who died of pericarditis, in which there was such an amount of effusion into the cavity of the pericardium that the opposite surfaces were kept asunder, and the point of the heart alone tilted against a small portion of the opposing surface, and,

therefore, the parts that were thus allowed to come into contact alone became smooth, resembling the parent structure, while the rest was rough and flocculent. It is not easy to assign any determinate time within which a false membrane becomes organized. The period differs in different cases. There is a case recorded by Sir Everard Home, in which the false membrane is said to have been formed, and to have admitted of injection, or to have exhibited vessels in it, within nine-and-twenty hours. It was a case of strangulated hernia which had been operated upon. The portion of intestine that was strangulated presented no appearance of lymph when it was returned. The patient only survived the operation nine-and-twenty hours, and for the last five hours of his life there was no pulse to be felt at the wrist. When the body was examined, the portion of intestine that before presented no appearance of lymph was now coated with it, and this lymph received injection. I would here observe, in reference to organization, that to refuse to a structure its pretensions to be considered an organised structure until it presents vessels capable of receiving injection, would be to ignore the organic pretensions of many animal structures in which the blood is not contained in vessels, but is loosely diffused through their parenchyma, and which, notwithstanding, retain an undisputed title to organization; while, on the other hand, if we admit the blood in the lymph to be evidence enough of its organization, we recognise the ordinary law of disease which degrades or lowers the condition of an organ or structure to what it is permanently in an inferior animal, or to what it had been for a time in the same animal in the progress of structural development. The vessels, according to this law, form subsequently in the false membrane, and it now assimilates to a higher organization in the animal series.

I would here introduce an observation of Andral's, which appears to be peculiarly applicable. He remarks: "It is admitted that the phenomena designated vital only manifest themselves under certain conditions in the arrangement of the molecules of a body—arrangement that is called organization—but the meaning of this term is far from being precise or determinate. We are not to believe that the manifestation of life only occurs when this organization exists, such as we observe it in the higher animals, and such as we are accustomed to represent it to ourselves. Follow the series of living beings, and you will observe the instruments of vital agency to diminish more and more in number and complication; you will even find them to disappear, and still there will be life. Life is not less in the vegetable seed, the liquid drop, the first ru-

diment of the animal embryo—even in these parts we find less than in the blood of the rudiments of what we call organization. In the absence of the forms to which common opinion attaches the idea of life, vital acts may still be performed. So far, then, from imposing on the manifestation of life certain conditions of molecular arrangement, observation exhibits to us a thousand different instances of life, not by forms, but by acts."

When this pathological product is duly organized, it assumes all the physical, physiological, and pathological characters of a normal structure. It has ever been an object of interest to the pathologist, both from the changes that take place in itself, and from the effects that it produces in the organs with which it is connected. The subject is too extensive a one to admit of my entering into anything like a full detail of it. I must content myself with a general view of it, and reserve for a future communication some of its most interesting and important relations, and its connexion with some of the most important organs.

This morbid product is susceptible of all the pathological conditions of which an original structure is susceptible: it is subject both to active and passive hyperemia; and often have we seen exhibited, at our pathological meetings, as specimens of hemorrhagic pleurisy and pericarditis, what were really this product of a former inflammation, now the seat of a recent sanguineous effusion. The great depth of it was to me proof enough that it was no new product, but that it had been of old date. In fact, we can always determine the age of this morbid product by its depth. I shall, on the present occasion, more particularly consider its development in its relation to the heart and lungs. I have had for years under my care and observation cases which I originally met as cases of acute pleuritis and pericarditis, and in which I was satisfied, from their peculiar signs, that this morbid product survived the acute disease and remained behind, and had become the seat of subsequent disease; and whenever I had an opportunity of examining them after death I ever found that the depth of the false membrane was proportionate to its age, and to the number of times that the patient's complaint during life had led me to suspect that it had been the seat of morbid action.

Senac records a case in which he says the false membrane of the heart attained to a depth of four inches; and although he admits that this is an unusual depth for this morbid product to attain to, yet that it is no uncommon thing to meet with it an inch thick. Pinel describes in the following terms the post-mortem examination of the famous Mirabeau, who died of pericarditis:—"Ou trouva des traces d'inflammation dans l'esto-

mac, dans le duodenum, dans une partie de la surface du foie, dans le rein droit, et dans le diaphragme, mais la partie la plus fortement affectée fut le péricarde, qui contenait une quantité considérable d'un fluide épais, jaunâtre, et opaque ; des concrétions albumineuses recouvrerent toute la membrane séreuse qui enveloppa le cœur excepté la pointe ; le péricarde lui-même avait contracté une épaisseur des quatre lignes." The depth of the false membrane here described is a proof to me that it was not of recent formation, but that it was the result of former disease, and that it was it, and not the pericardium, that was the seat of the fatal inflammation. We can easily understand why this individual should be the subject of such a disease. The part that he played in the political drama of the day would have been cause enough ; but, in addition to this, there was no kind of sensuality in which he did not indulge : as Pinel remarks :—" Mirabeau plein de confiance dans l'énergie de sa constitution et entraîné par l'habitude du plaisir sentait de se jouer des ses forces physiques."

I have asserted that false membrane taking its place amongst the other normal structures of the body is at least as susceptible of disease as other structures are. It is not alone the seat of hyperemia, as I have already observed ; it is the matrix of suppuration either in the form of circumscribed abscess or diffuse inflammation ; it is also the seat of non-analogous products, such as scrofulous and cancerous tubercle, exhibiting this tendency more strongly than an original structure, as we have seen illustrated by this striking fact, that one and the same inflammation will cause effusion of lymph in a normal structure, while it will issue in the deposit of tubercle in this adventitious product, the result of a former inflammation. I have in my Pathological Museum a specimen of a false membrane of pericarditis, containing tubercles, which were a simultaneous result of the same inflammation that gave rise to the effusion of lymph on the lung.

I have already remarked that this false membrane will be the seat of abscess, in proof of which I would adduce the following case :—James Shepherd, aged 13, came under my care in hospital after having been ill four days, his illness beginning with sharp lancinating pain in the right side. He had considerable heat of skin and quickness of pulse, with extreme hurriedness of respiration. He could only lie on the right side, although he still felt pain in this side. There was no apparent enlargement of the side. Percussion yielded a dull sound through all the right side, both anteriorly and posteriorly. There was no trace of respiration to be heard in any part of this side, ex-

cept between the spine and the posterior margin of the scapula, where it was bronchial. No change of position made any alteration in the stethoscopic signs. The general dulness of the side and absence of respiration continued *in statu quo*. Treatment made no impression on the disease. He sank under it. Examination of the body exhibited the following interesting appearances. The pleura pulmonalis and costalis on the right side cohered through their entire extent; and the hand, in attempting to separate them, sank into what appeared to be softened substance of the lung, from which a large quantity of purulent matter immediately escaped. On removing the lung its surface was coated with flocculent lymph in the form of a shreddy membrane, and its substance appeared unusually dense and heavy. We now directed our attention to the point where the hand sank into the lung, and from which the matter issued; it was about half way between the apex and base, and between the anterior and posterior margins of the organ, we found here a well-defined circumscribed large abscess, and apparently in the substance of the lung. However, on closer examination, we discovered that the substance of the lung was not the nidus or seat of the abscess, but that in the situation of the division or sulcus of the lobes, which had been obliterated by a former inflammation, the cellular membrane that constituted the connecting medium of the opposite surfaces was the real seat of it, and the pressure of the abscess on the substance of the lung in its immediate vicinity had given it the condensed appearance of a carnegied lung. The rest of the organ was either hepatized or in a state of engorgement. I have seen what has been exhibited as a specimen of abscess of the base of the lung to be in fact nothing more than abscess in the cellular membrane, the product of a former inflammation which had caused the adhesion of the portion of the pleura lining the base of the lung, and that which lined the corresponding surface of the diaphragm.

I believe that many cases which have been supposed to be abscess of the heart were nothing more than suppuration of the false membrane, the result of an ancient pericarditis, as we know how little exposed the heart is to the formation of abscess, in consequence of the very small proportion of areolar membrane that enters into its structure,—a wise economy of Nature to secure so important an organ against disease, which is ever in the direct ratio of the amount of areolar membrane that enters into its composition. I have heard of ossification of the heart, which I knew to be no more than the transformation of the false membrane of pericarditis into bone. I also

have cases in proof of the fact of the false membrane of pleuritis being the seat of diffuse inflammation. I had one remarkable case in a man who had gangrenous erysipelas, and in whom the false membrane connecting the pleura was infiltrated with purulent matter. I have met with a case in which a false membrane investing the lungs was the seat of an extensive deposit of cancerous tubercles, at the same time that there existed a large amount of this disease in the substance of the lung; and in the same subject a false membrane coating the heart also contained cancerous tubercles in it. The case was that of a woman whose breast had been removed for cancer six months previously. The pleural false membrane was in parts fully an inch thick.

There are two remarkable circumstances connected with this morbid product that are especially deserving of attention, and with which are connected almost the most interesting points involved in its consideration. One is the remarkable contraction that it undergoes, and the influence that this contraction exercises upon the organs with which it is connected. The other is the peculiar phases of transformation through which it passes, from its appearance as lymph, then as cellular and fibro-cellular structure, and often as bone and cartilage, of which there are in my museum many remarkable specimens.

I shall first notice the contraction of the false membrane, as I conceive it will assist us, in some measure, in yielding some explanation of the transformations that this product undergoes. This contraction affects different organs differently. I shall notice its effect on the lung. It compresses it so as to lessen it in all its diameters both longitudinally and transversely; it also almost entirely annihilates its vesicular structure. I shall not farther allude to the ulterior changes it produces in the organ, as I shall have occasion to return to the subject when I come to explain more fully the pathological effects of it. I need, for the present, only remark on the obliteration of the vesicular structure, as I believe we may find in it some clue to the physiological explanation of the peculiar transformation that the false membrane undergoes. We know that in the normal state the pressure of the external air on the sides of the chest is exactly counterbalanced by the pressure of the air received into the lungs. When these are in precise normal equilibrium, the chest retains its natural shape and form. But this balance may be disturbed either by the pressure from within being greater than that from without, or by the pressure from without being greater than that from within. In both cases the shape of the chest is altered: in the former case, which occurs

in emphysema of the lungs, the chest acquires the well-known projecting form, yielding, as it does, to the pressure of the air retained in the lung. In the latter case the chest, as it were, falls in, yielding to the external pressure, which is not counterpoised by the air within, the lung being no longer capable of admitting it in sufficient quantity for such an effect, in consequence of its condensed structure. Nature calls to her aid other resources to meet this emergency. The ribs and their cartilages acquire increased strength; they undergo a process of hypertrophy. I have a specimen which presents an instance of hypertrophy of the cartilages of the ribs. If the sections on the two sides be compared, the difference is very striking. In this case the lung was compressed by a dense false membrane, and from complete obliteration of its vesicular structure admitted but little air; this side of the chest was much less than the opposite one. I believe that it is not alone the normal structures that are called upon to sustain the increased pressure, and which, to answer this call, acquire additional strength, but also the morbid products that have occasioned this change in the organ, and to which it owes its being no longer able to meet the pressure from without. These products themselves, in their ultimate organization, acquire a strength to enable them to help to relieve that condition that they have produced. We here see some of those provisional resources of Nature with which she abounds to meet the emergencies of disease, and which disease itself calls out. All the changes that the false membrane undergoes acquire for it additional strength. These consist in its conversion into dense fibrous structure, cartilaginous structure, and bony structure. This appears to me to be the explanation of those remarkable changes that we find to take place especially in the pleural false membranes. We recognise a physiological design, a purpose in them, which is at least a more satisfactory explanation of their formation than to say that when nutrition gets out of its proper orbit or track, there is no calculating where she may go—she is drifting at random. Analogy appears to lend a support to this explanation in changes which we see taking place elsewhere to answer a physiological purpose. Thus, if the dislocated bone remain out of its place for a certain time, a false joint is formed, which is effected by the areolar membrane, in the midst of which the head of the displaced bone is thrown, undergoing changes representing the different structures which enter into the composition of a true joint. Physiological necessity explains the changes in the areolar membrane. In the same way it has been observed, that the posterior cervical ligament, which is so strong and firm in the

horse and ox, and is less firm and elastic in sheep, and exists only in a rudimentary state in the cat, while in the human subject it is nothing more than areolar tissue,—in the case of man, acquires unusual firmness and strength, should he have much occasion to exercise the muscles of the posterior part of the neck, or should the position of his head be bent habitually downwards and forwards by heavy loads, and thus require for this accidental condition a strength for this ligament which the permanent natural condition of other animals demands.

I would now notice the remarkable contractile property exercised by this morbid product or false membrane—a property which exercises itself variously on different organs according to the arrangement of their structure. The influences and effects of this product were first noticed in the liver, and were seen to consist in a remarkable diminution of the normal dimensions of this organ, and in such an effect upon its blood-vessels that those of the porta distributed through it more or less refused passage to the blood through them, and from this followed congestion of this vessel and of all its tributary streams, whether of the serous or mucous capillaries, that either directly or indirectly poured their blood into it. The congested capillaries of the peritoneum allowed the serum of the blood to escape into this cavity, giving rise to ascites, while the more yielding capillaries of the mucous membrane permitted all the elements of the blood to be poured out, and thus give rise to hemorrhage, often fatal, in the form of hematemesis. The inflammatory character of this product has been questioned. Indeed, the nature of the pathological change was described by no less an authority than Laennec, in such a way as plainly proved that he quite mistook its nature. I should here remark, that I have had opportunity of pursuing cases that have presented themselves first as cases of peritonitis, terminating in effusion; the peritonitis and effusion had yielded to treatment; and, after a long interval, these same cases returned with ascites, not connected with or dependent on peritonitis^a, and which I referred to cirrhosis of the liver, a diagnosis which a fatal hematemesis, in not a few cases, afforded me an opportunity of verifying. This also served as a proof that the affection was not only inflammatory, but that it proceeded from the invest-

^a I say, "not connected with, or dependent on, peritonitis," for I believe that in most cases of effusion into the abdomen resulting from peritonitis, percussion yields a dull sound, in consequence of the intestines being prevented by adhesions floating on the surface of the fluid, as they do in cases of effusion from other causes, when the sound is clear and tympanitic. This difference to percussion has never disappointed me as a diagnostic guide.

ing membrane of the organ to its substance, and was not centrifugal or propagated from an inflamed duodenum to the substance of the liver, and from thence to the surface,—an opinion, I must confess, which would seem to derive countenance from the peculiar habit in which this disease usually occurs, viz., in persons affected with gastritis from the use of ardent spirits, or in whom gastro-duodenitis might be expected to occur. Dr. Corrigan was the first to give what I believe to be a correct explanation of this peculiar pathological phenomenon occurring in the lungs, and which had been designated dilated bronchial tubes. He attributed it to the same cause that operated in the production of cirrhosis of the liver, and substituted the designation of cirrhosis of the lung for that of dilated bronchial tubes. He showed how this product of disease, while it acted on the lung generally as on the liver, and contracted it in all its axes, extending into the substance of the lung at the same time that it obliterated the vesicular structure of it, dilated the terminations of the bronchial tubes, and thus, in a measure, compensated for the injury it had done.

Doubts have been entertained whether cirrhosis of the liver is really the result of inflammation. If cirrhosis of the liver and lung be allowed to be similar affections, there is no question that cirrhosis of the lung has an inflammatory origin, and, therefore, that of the liver may be inferred to have the same.

The inflammatory origin of this affection of the lungs is more within the reach of direct proof than cirrhosis of the liver. We can more frequently connect it with pleuritis or pleuro-pneumonia than we can connect the other with peritonitis. It is not easy, however, to determine why cirrhosis of the lung is so rare in comparison with the frequency of pleuritis or pleuro-pneumonia, or what is the constitutional peculiarity that causes this special product to exhibit this remarkable contractile property to prevail in any case. For it has been observed, that cirrhosis of the lung, liver, and a corresponding affection of the kidneys, with valvular disease of the heart, the result of the effused lymph exercising its contractile effects on these valves, will not unfrequently be found to coexist in the same subject, a fact of which I have had frequent experience.

Histological observations have recognised an identity of development in fibrous tissue, in false membranes, in the matter of cicatrix, and in granulations, and this identity of mode of development, and also peculiar property of contraction, would argue a positive identity of nature and constitution.

I shall now advert to some of the pathological effects of this

product on the different elements or ingredients of the different organs. It compresses all the structures of an organ: its parenchyma, blood-vessels, and nerves, especially when it penetrates into the structure of the organ. If it engage much of the structure of one lung, it will compress all its vessels, and give rise to a proportionate congestion of the vessels of the opposite lung, so that the hemoptysis, which is a very common phenomenon in this lesion, and which contributes much to its being confounded with phthisis, generally comes from the lung that is not otherwise affected; and so it occurs here as in hematemesis, dependent on cirrhosis of the liver, the blood comes from a source at a considerable distance from the seat of the disease.

I would direct attention to the complaints made by patients who suffer from affections of this false membrane, whether of the lungs or the heart. I have had opportunity of observing both for years. Some I have met with whom I had seen when first attacked with the pleuritis and pericarditis, and therefore I knew what had taken place. Other cases I met with and owed the recognition of them to the similarity of their symptoms, with those with which I was familiar. In cases of the lungs I have met with some that had been confounded with phthisis, and I knew one gentleman who was sent to Madeira for phthisis. The want of symmetry of the two sides will in general lead to a correct diagnosis. The dulness on percussion and feeble respiration, which always continue, still further discover it. The patient ever retains a sense of stiffness and inability to take as full an inspiration on this side as the other. The pain complained of is not the pain either of inflamed serous membrane, nor is it of pneumonia, but of a rheumatic character, and I believe the reason is because that the false membrane has been transformed into a fibrous membrane, and conforms to it in its pathological susceptibilities. This I believe to be the explanation of many of those pains which have been designated pleurodyniæ, or muscular pains. I have watched the false membrane of pericarditis and its affections for years. I have had the case as one of acute pericarditis, and have been satisfied of an adhesion having been contracted between the opposite pericardial surfaces; and afterwards have had the patient under my care for ailments in the cardiac region, and which did not present the phenomena of an original pericarditis, but did present those which I had no difficulty in referring to an affection of the membrane connecting the laminae of the pericardium, and post-mortem examination has confirmed the diagnosis. I would here remark on the change which the adherent pericardium produces in the heart. It was long supposed that it produced permanent enlargement and hy-

per trophy of the organ. Two causes contributed to this opinion: one was that it was thought probable such a result should follow from the increased action with which the heart ever tries to release itself from this impediment to its free motion,—an increased action that is always observable for some time after the adhesion has taken place, but which is not continued long. The organ appears to yield to a necessity that it cannot control, and soon resumes its wonted normal rhythm. The other cause, that so commonly led to this mistake, was the great frequency with which the heart was actually found enlarged in cases of adherent pericardium, and, therefore, the adherent pericardium, naturally enough, was regarded as the cause of the enlargement. But examination ever proved that whenever the heart was enlarged, in cases of adherent pericardium, there was also endocarditis present; and further investigations established the fact, that if adherent pericardium alone were present, there was no hypertrophy of the heart, but an actual diminution of its size, and often a conversion of its substance into fat. If we were to pursue our inquiry to its natural limits, and follow this morbid product into its effects on the endocardium, it would lead us into the extended field of valvular disease of the heart. For it is this same morbid product which, deposited originally as lymph, whether interstitially or superficially on the valves, exerts on them its contractile influence, and thus unfits them for the due performance of their function. This is too large a subject for me to do more than merely allude to at present.

The case of an intelligent and zealous pupil afforded an example of the effect of this product on a nerve. He was affected with pleuro-pneumonia of the left side, engaging the base and internal surface of the left lung. He had not been in good health at the time he was attacked. He had a very severe illness, the issue of which was for a considerable time very uncertain. When he did recover I was satisfied that the base of the lung had contracted an adhesion with the diaphragm, while the internal surface had formed an adhesion to the side of the pericardium. He afterwards became the subject of an occasional pain in the left side, which exactly followed the course of the phrenic nerve, and which seemed to begin at the situation of the primitive inflammation of the internal surface of the lung and the side of the pericardium.

I shall here close these observations, which are but preliminary to what I purpose to enlarge upon on a future occasion, deeming the subject one of the deepest importance both to pathology and to practical medicine.

ART. III.—*Report of Two Cases in which Ligature was applied to the Posterior Auris Artery.* By WILLIAM COLLES, Surgeon to Steevens' Hospital.

THE following cases present little similarity in the symptoms or appearance of the disease for which the operation was performed; they were both benefited by the operation, but in neither was the cure as perfect as could have been wished, for in neither was the disease a pure unmixed aneurism. I think both cases present features of interest, and are examples of the partial success of an operation of which we have few, if any, records.

Mrs. F., a stout, healthy-looking woman, aged 27, mother of three children, states, that five or six years ago her attention was first drawn to a spot behind the left ear as being the situation to which she referred a buzzing sound constantly annoying her whenever she laid the head in a recumbent position. She could discover no tumour at that time. The noise has gradually increased to the present extent, and about a year ago she first perceived the tumour and felt the pulsation in it. About three years since she had pain and deafness in the ear, but this was relieved by syringing. At present she can scarcely obtain any sleep in consequence of a loud ringing noise, synchronous with the pulsations of the heart, pervading the entire head, which is worse when she lies on the affected side. During the day, any motion of the head, especially stooping, is attended with a sense of weight and giddiness, so that she dreads making any exertion. She has always been nervous, and subject to palpitations of the heart.

On examination, a tumour is perceived, situated in the centre of the ridge of bone behind the left ear, and pushing it forward. It is about the size of a small walnut, measures one inch and a quarter in length, and three-quarters of an inch in breadth, smooth, and of the natural colour. On applying the fingers, a pulsation, with evident expansion, is felt in all parts of it. On increasing the pressure, the tumour, which feels quite soft and fluctuating, yields till we have the sensation as if the finger sank into a depression or hole in the bone, through which the tumour emptied itself. On removing the finger the tumour again rises. On applying the stethoscope a remarkably loud bruit de soufflet is heard, synchronous with the pulsation of the arteries; the posterior aural artery feels enlarged, and goes directly to the tumour. By pressure on this vessel the tumour becomes flaccid, the bruit ceases, and both again return on removing the pressure.

There was a considerable difficulty in arriving at an accurate knowledge of the nature of this tumour: the artery going into it, the pulsation and evident expansion of the tumour at each pulsation, and the existence of a bruit, would lead us to infer it to be an aneurism of the posterior aural artery. The evident internal derangement it caused; the large size of it compared with the size of the artery; its being entirely filled with fluid, yielding so readily, being so rapidly emptied by pressure; the feeling of hollow or cavity in the bone, and the fluid by pressure being evidently forced along this cavity; the very loud and prolonged sound heard by the stethoscope, not merely a bruit as in aneurism, but a prolonged rush of fluid, led to some hesitation in pronouncing as to the exact nature of the disease. However, as pressing on the artery had such influence on the tumour, it was resolved to try whether considering it as an aneurism, and accordingly treating it as such by pressure, would effect any amendment.

At first we tried to have pressure applied on the tumour itself, as presenting a larger surface and affording a more firm fixed point to act on; but we were soon obliged to abandon this plan, as it caused such intolerable pain. We then endeavoured to apply the pressure on the artery going to the tumour, but here we found it impossible to apply it: no instrument that could be invented could be kept applied steadily on the vessel, passing as it did on a high ridge of bone; it even required so many bands, the constraint and weight and tightness of them rendered the patient most miserable; and lying down, or moving the head, would cause them to shift their places. We were, therefore, obliged to abandon pressure entirely, and although there was some hesitation as to the nature of the disease, there was none as to the expediency of taking up the artery, which was done.

The patient lying on the sound side, chloroform being administered, an incision was made exactly over the line of the artery, the integuments divided on each side of it, and without proceeding to lay bare the artery by minute dissection, as I knew there was nothing of importance there to interfere, I proceeded to pass the ligature round the vessel by means of a small aneurism needle, with a narrow curve and a sharp point, introducing it at the anterior edge of the vessel, and making it scrape along the bone until it came out at the other side. I now could feel the artery included in the ligature, and proceeded to tie it, when the pulsation in the tumour ceased, and it became flaccid. The patient suffered much, first, from the effects of the chloroform, optic pain, sickness of stomach, and some feverish symp-

toms. However, the ligature came away on the ninth day; and the wound healed. She now says she is much relieved from the painfully loud buzzing noise in her head, and can sleep and move about much better. Though the tumour was still existing, soft and compressible, no pulsation was to be felt in it, and the existence of any bruit was a matter of doubt.

The results of the operation led us to infer that this was not a simple aneurism of the posterior aural artery; that it was not that pulsating tumour of bone described by Mr. Stanley; but that it could only be accounted for by acknowledging the existence of a communication between the artery and a large vein, or sinus, in the interior of the skull. It was suggested to try a further operation, of either injecting the tumour with solution of perchloride of iron, or solidifying it by means of the galvanic battery, or to lay it open and dress from the bottom. We were, however, unwilling to recommend the patient to submit to any of these proceedings, which would be attended with a great risk to her life; and as she seemed content with the advantage she had derived, we advised her to have nothing further done unless the disease progressed.

I subjoin the brief notes of a case I find in my father's handwriting, and which is alluded to by Mr. Harrison in his comprehensive work on the *Surgical Anatomy of the Arteries.*

James Fagan, aged 40, labourer, admitted September 2, 1810, for a complaint of left external ear. The lower half of the ear was thickened to nearly three times its natural thickness, was of a blue or slightly purple colour, and on its surface many small bloodvessels were visible. A very strong pulsation was felt in every part of this thickened portion of the ear, this pulsation corresponding with that of the posterior aural artery. The artery near to the cranium appeared to be of a much larger size than common, and pulsated strongly.

On August 31st the artery was laid bare, a double ligature passed under it, and divided, and each ligature tied separately. The pulsation, though considerably decreased, was still to be felt on the following day. This morning the pulsation can be more sensibly felt on the anterior part of the ear. The artery on the anterior part can be felt beating with uncommon violence. Pulsation of the transverse faciei. No unusual pulsation of the carotids, or any of the arteries going to the head. The swelled part of the ear has a fleshy feel, without any feel of distinct cavities^a.

^a Extracted from the Manuscript Report.

ART. IV.—*On Perineal Testicle.* By THOMAS H. LEDWICH,
F. R. C. S., Lecturer on Anatomy and Physiology, Original
School of Medicine, Peter-street.

IT is by no means astonishing that organs which take their initiatory steps in development in one region as their foetal habitation, and gradually and by successive steps seek a different and distant site as their permanent situation, should occasionally suffer an arrest in their progress of translation, representing in their abnormal position in the human subject the natural conformation which obtains in some of the lower animals. That this should occur in reference to the testicles, even more so than regards any other structure in the body, is sufficiently obvious to those acquainted with the variety of causes calculated to detain the nascent organ in its primary position, to arrest it in its progress to its ultimate destination, and to alter its natural relations during its slow and feeble transition. Cases are recorded, by almost every writer on surgical anatomy, where the testicle has remained during the life of the individual within the abdominal cavity, lying in the site of its original development below the kidney, and above the gubernaculum testis of Hunter. Cases representing its arrest are also sufficiently numerous where it is found at the internal or external rings^a, or in the intervening inguinal canal; and lastly, occupying the upper part of the scrotum only,—abnormalities sufficiently explicable by the relation and attachment of the organ. But yet there exists another situation in which the testicle may be found, not only interesting from the obscurity of its cause, but important from the unfortunate results that might ensue from an ignorance of its locality.

A subject, aged about thirty-five years, was received into the dissecting-room of the School for the purpose of dissection, apparently well formed, and possessing a full muscular development. On directing my attention to the genital organs, the scrotum appeared long, narrow, and pendulous, and a closer inspection revealed an absence of the scrotal raphe; while the penis and urethra presented no unusual peculiarity. The non-existence of the raphe was sufficient to induce a more minute examination, which proved that the scrotal bag contained but a single testicle, that of the left side, the second or right lying in the perineum, anterior and internal to the ascending ramus and forepart of the right tuber ischii, 1 inch in front of the

^a See Mr. Hamilton on Undescended Testicle. Dublin Quarterly Journal of Medical Science, May, 1852.

anus. In this situation the organ was extremely mobile, and could with facility be forced upwards and forwards into the scrotum; but the moment the pressure was removed it relapsed into its former position. That which should be the anterior edge in its normal state looked downwards, but the epididymis could be felt distinctly at its superior margin. The following measurements were made prior to dissection. Between the iliac spines, 10 inches; from the anterior superior spine of the ilium to the spine of the pubis, 5 inches; from the spine of the pubis to the lowest part of the left testicle, $5\frac{1}{4}$ inches; from the same point to the inferior portion of the right or perineal testicle, $4\frac{1}{2}$ inches. On throwing down the integument and proceeding with the ordinary course of dissection, the dartos, fasciæ, and tunica erythroidea, seemed perfectly normal, as well as the tunica serosa. The testicle was small and remarkably soft, its measurements being the following: length, 14 lines; breadth, 8 lines; depth, 6 lines. On removing it from the bed which it occupied, its deep relations were discovered to be the following: externally—ascending ramus of the ischium, anterior part of the tuber and origin of the adductor magnus; posteriorly—crus penis and triangular ligament of the urethra; and internally—the bulb. The further examination of the tubular structure exhibited unqualified evidence of the functional activity of the organ during life, by the discovery of spermatozoa in various stages of development within the tubes and seminal ducts, notwithstanding that five days had elapsed since the death of the subject, and decomposition was rapidly progressing at the surface.

Mr. Curling, in his elaborate article on the Abnormal Anatomy of the Testicle, in the Cyclopædia of Anatomy and Physiology, makes the following remarks in relation to this abnormality:—"Mr. Hunter first observed that the testicle in changing its situation does not always preserve a proper course towards the scrotum, there being instances of its taking another direction, and passing into the perineum. How this is brought about, he remarks, it is difficult to say; it may possibly be occasioned by something unusual in the construction of the scrotum, or, more probably, by a peculiarity in that of the perineum itself. For it is not easy to imagine how the testicle could make its way to parts about the perineum if they were in a perfectly natural state. He met with two instances of this imperfection. Many years ago, a little boy, one of whose testicles had thus deviated, was brought to the London Hospital. The gland was lodged in the perineum, at the root of the scrotum.

“M. Ricord met with this singular anomaly in two instances. M. Vidal (de Cassis) observed it in two brothers; their father was exempt from it. The testicle abnormally placed was smaller than the other. The irregularity is extremely rare; and the above cases are all with which I am acquainted.”

It is only at the close of the third month that the true sex of the foetus can be accurately determined. The glans penis is large, and the organ itself is slit by a sulcus on its under surface, bounded laterally by two tumid folds of integument; the closure of this groove constitutes the raphe, and the descent of the testis subsequently into each fold constitutes the pendulous scrotum. Where, then, was the raphe in this case indicating the centric union of the scrotum? Not a single trace of such a structure appeared; and it seems not irrational that an eccentric mode of development, substituted for the usual form, rendered the future scrotum perfect on one side only, whilst the absence of a redundant tegumentary investment explains the cause of the deviation on the malformed side. That this is an extremely rare abnormality is sufficiently evident from the fact of so few cases being recorded; and after the close prosecution of anatomy for the last thirteen years, I can only adduce this perfect displacement, and refer to a second, the features of which were so questionable as to deter me from recording it.

ART. V.—“*Unsoundness of Mind*,” in its *Medical and Legal Considerations*. By JOSEPH W. WILLIAMS, L. R. C. S. I., Licentiate of the King and Queen’s College of Physicians, &c.

(Continued from Vol. XVIII., p. 287.)

MORAL INSANITY.

IN proceeding to the consideration of those insane states in which the exaggeration or perversion of the moral intelligence, or affective faculty, is that most evident, the intellectual powers being apparently unaffected, so constituting the “moral mania” of writers, we enter on as important an investigation as the intricate study of Psychopathy affords. In the ordinary physical operations which are daily witnessed, similar combinations, when apart from vital influences, are found to eventuate in like results; experience, therefore, imparts a capability not only for their accurate appreciation, but also for their predication; which capability is proportionate to the degree of certainty attainable in each demonstrative science. Medicine, while

offering to the reflective mind the highest range of study such investigations embrace, at the same time opens a much wider field for induction; since, while duly estimating the importance of material relations, the reciprocity of action evinced by the several organs, and the varied physical changes explicable by organic laws, the mysterious influences associated with vitality must also be recognised. When the apparently diverse operations of a single law, or the uniform operation of different laws, according to the circumstances which modify its development, or regulate their combination, come to be appreciated in their general as well as particular relations, the investigator of disease soon learns to divest his mind of fixed rules, since instances not unfrequently occur in which the most careful analysis fails to explain the rationale of vital operations, though observation at the same time satisfies us that there exists a certain uniformity in their conjunction. The truths of medical experience are not the less valuable, because in many instances they are inexplicable. As our intimacy with morbid action extends, scepticism diminishes: continued observation leads to the organization of knowledge; vital phenomena, as particular facts, are thereby referred to others more general, whose scrutiny, it is not impossible, may eventuate in the recognition of some principle in nature of which no explanation can be given, yet from whose estimation rules of great practical utility are derivable.

It is especially important that those who desire to justly estimate the varied characteristics of the disease we are about to consider, be duly impressed with the true nature of the connexion which exists between the moral and intellectual faculties. Such knowledge, while entailing an analysis of the mental constitution as appertaining to all, at the same time involves the careful study of those various circumstances capable of influencing its development in each.

The study of mental health, as identified with mental soundness, should form the basis of every inquiry in which the question of sanity is to be determined; without such knowledge treatment must be empirical, and opinions undirected by general principles prove valueless. This study, it has been by many supposed, demands a capability for abstruse speculations and metaphysical research, and is, therefore, involved in extraordinary difficulty. It will be apparent that the useful exercise of medical science is altogether remote from doctrinal subtlety, resting on evidences which, however in their ultimate analysis impenetrable to philosophic scrutiny, are, nevertheless, for the practical purposes of life, sufficiently appreciable.

On what does *crime* depend? Is it a simple psychical phenomenon, having as its essence logical errors? If so, the nearest approach to perfection should be found in the best informed mind, and those who are wholly uneducated be of necessity the most criminal. Does the moral power, as it has been termed, exist so independently of the intellectual, that it possesses a capability of carrying into practice innate aspirations, be they good or evil? If so, what mortal dare pronounce on the existence of guilt? Every day's experience disproves the first,—the most limited observation refutes the second of these propositions. If, then, in the commission of crime neither the moral nor intellectual principle appears to act independent of the other, let us inquire how far they are identified, and to what extent their unity is involved, when resulting in the exercise of acts open to the charge of criminality.

The human mind has been regarded as a series of progressive developments, consisting of intellectual powers, moral feelings, and instinctive propensities. The latter are identified with and common to animal natures; the former distinguish man from all other created beings. We are led to regard the moral or affective faculty as occupying a medium sphere, which is, therefore, to a certain extent identified with the intelligence in its psychical direction, and associated with the organism in its physical realization. From this medium sphere emotions spring, which, receiving the further cooperation of the intelligence, become desires; these, however dependent for their existence, must be admitted to exercise a reactive power, and to constitute in their turn so many incentives to intellectual action. Such a reciprocity amounts to a mutual dependency, and experience demonstrates that this, as contradistinguished from a unity, exists between the intellectual and moral faculty. Unless the balance of their power be maintained, the following results ensue:—If the intelligence be rightly directed, it will prove adequate to preserve the emotional feelings in their legitimate course, and, by impressing motives of the highest order, enable the will to successfully combat natural desires. If the emotional feelings be suffered to proceed uncontrolled, they thereby acquire such an habitude as affords them undue power in resisting the psychical suggestions associated with them, and further enables them to reject those innate counsels of the moral faculty or moral sense to which, under ordinary circumstances, they are wont to respond.

At length, through such a process, the emotive feelings acquiring the mastery, are enabled to not only involve the volition, but also to render the intellectual powers the active,

though depraved, instruments for their gratification. Many causes are thus adequate to produce a similar result. If the purely intellectual powers be interrupted in their action, they fail to direct the moral or emotional faculty. If the normal relations of the organism become impaired, the emotive feelings, as being closely related to the personality, evince the change. If the emotive faculties, through the insensible co-operation of both spheres, acquire undue power, a want of harmony speedily pervades the whole system, evidenced, on the one hand by ill-regulated passions, and on the other by disordered functions. In fact, the relationship of these three powers is from observation proved to be so intimate and complete, that he who would determine the question of mental soundness in connexion with responsibility, without duly weighing the separate influence of each, should but imperfectly estimate the importance of such a duty.

Feelings of pleasure and pain, being developed coincident with the maturation of the living structure, may be regarded as to a certain extent forming the natural basis or guide to each voluntary movement, and thus furnishing the groundwork for all subsequent intellectual actions which such movements entail. Pleasure and pain, in their physical associations, by a process of assimilation become identified with right and wrong in their psychical relations, as something to be desired or avoided. *Reasoning from analogy, the principles of an ethical code,—this moral sense to which we have alluded, or intuitive moral perception—may be considered as being identified with each mental constitution, in the same manner as the discrimination of material operations rests in every physical organization.* Those principles in the lower animals wanting the direction of reason are wholly impulsive, constituting their instincts, which, resulting from the dictates of an unknown principle, appear not only uniform in individuals of the same class, but are also performed without a knowledge or consciousness of their ultimate results. This instinct or animal passion, however capable of mechanical direction, yet requiring no experience for its guidance, fulfils to all intents the purposes of an intelligence; and since in brute life there is no accountability beyond the individual, the most perfect gratification of animal desires may be presumed as the *summum bonum* of their existence. Man's reason admits of no comparison with such instinct. Those desires he possesses in common with other animals rest not only within the control of his will, but are also capable of being influenced by the separate mental agencies which eventuate in its formation. Were it not so, life would present a perfect chaos of

ungoverned passions, since, in addition to his natural impulses, artificial appetites become, as it were, self-engendered, the insensible results of habitual exercises.

That in man this moral faculty or moral sense, endowed with a certain authority, exists, is sufficiently evident from our individual consciousness. We admit that the positive obligations of life, as regards their prudential relations, demand the guidance of the judgment, which pre-argues the possession of experience. *Our moral exercises are, however, the promptings of natural principles, coexistent with, though independent of, psychical perceptions.* The former are regulated by a special regard for individual interests; the latter result from a particular sense of general duties. Right is a positive term which admits of no perversion. A sense of right exists, therefore, independently of those intellectual powers which *guide its operation*. The whole world lives under a moral government:—"Yea, and why even *of yourselves* judge ye not what is right?" asks our Lord. Again it is written:—"The Gentiles, which have not the law, do *by nature* the things written in the law." Whence, then, proceeds crime, man having as a guide his natural conscience? Observation of life affords this reply:—He is at the same time the creature of his natural appetites. Our study, therefore, of the manifold operations of the latter, as manifest in the world around us,—our careful analysis of the varied circumstances associated with each criminal act, promises to afford the best explanation of the question we are discussing. Admitting in each the presence of an innate moral principle, it may be asked:—Whence arises the wide range of differences observable in the ethical judgments of men; and how does it occur that those judgments are capable of being modified by their intellectual operations? To this we may reply:—The sense of moral perception does not in its practical application appear to be as uniformly guided as it is universally bestowed. The moral appreciation of the qualities of *different* actions, in reference to the *same* object, implies an elective power involving the exercise of the intelligence for their discrimination, and its co-operation for their adoption and exposition. Though, then, the moral standard be fixed for all, ethical judgments are found to vary with many, not so much from any original diversity of their moral sense, but according to the acquired perceptions of existing relations as submitted to that sense. We have used the term "original diversity of their moral sense;" for we believe psychical analysis will sufficiently establish it as a fact, that in the moral, as in the intellectual constitution, individual dispositions will be

found to exist, which, though amenable to general rules, are not the less on that account particular examples. This will be evidenced as we proceed.

Was this moral sense, as being an essential part of the human constitution, by itself capable of active exercise,—that is, of not only determining on that which was right, but also of insuring its adoption,—men should, in accordance with an admitted law of their natures, be not alone universally and intuitively, but *necessarily* attracted to that which is good, its practice being essential for their immediate enjoyment and ultimate preservation. The intelligence should then be invariably occupied in perfecting moral exercises. We see that it is not so. Were we to regard morality as merely the issue of prudential considerations directed by rational self-love, the question would still remain to be determined:—Whence is derivable that regulating principle which, under circumstances of the greatest complexity, is capable of its uniform direction? These questions have worthily occupied the greatest minds. Their practical elucidation may be assisted by a reference to our individual consciousness, as well as to our general observation, when we shall be satisfied that many of our daily exercises must be referred to a principle of action occupying a middle sphere, where the mental and moral intelligence, as it were, meet, co-operate, or react one on the other. This psycho-physical plane, or "*conscience*," has been presumed to be capable of furnishing to every one an invariable rule of right or wrong. Metaphysicians and theologians have defined moral and religious duty as an accordance to such rule; while lawyers—with what propriety we have already stated—have made the test of responsibility, as identified with soundness or unsoundness of mind, in criminal cases, to depend on the presumed ability or inability of the offender to determine on the recognition, rather than the adoption, of that which was right or wrong at the time of the commission of any particular act.

Before propounding the doctrine that the same standard of conscience appertains to all, we should establish the existence of their equal capability for the appreciation of right and wrong, not in its abstract, but relative sense. We use the term *abstract*, for we believe that a positive consciousness of evil appertains to every one in the commission of certain acts, and that this consciousness, however perverted, is never *wholly* lost, inasmuch as, should the intelligence prove inadequate to their recognition, the mere instincts of animal nature would rebel against them. That conscience is to be distinguished from reason may be inferred from the history of crime. That it is closely associated

with the intelligence is demonstrated in the code of morality which savage nations possess, as well as in the fact that where the moral sense is non-existent, the powers of the understanding are either undeveloped or destroyed. "The wretch," writes Dr. Winslow, "devoid of conscience is of course morally defunct; but we must never forget that conscience is a relative, not an absolute term, and that, like other faculties of the mind, it requires education, direction, and discipline." Allowing that moral commands are to be distinguished from positive duties, we must in our estimate of the latter admit that the just appreciation of their moral relations is essential for their proper guidance. "Every moral judgment is relative, and involves at least the comparison of two terms,—when we praise what has been done, it is with the coexistent conception of something else that might have been done; and when we resolve on a course that is right, it is to the exclusion of some other course that is wrong"^a. If, then, in the preference of one class of motives to another the moral rule of action consists, a question arises:—How is the value of various conflicting motives to be estimated? The answer rests:—By the universal standard of right, which the intuitive perceptions of the individual, the general judgment of men, and the positive ordination of heaven, furnish to each. Is each one equally competent for their estimate? This is an inquiry which, opening a wide field for ethical discussion, we shall forbear to enter on, further than observation of life warrants, a limited range of which suffices to establish the truth of Stewart's remark, that: "Fortunately for mankind the peace of society is not intrusted to accident, the great rules of a virtuous conduct being confessedly of such a nature as to be obvious to every sincere, well-disposed mind. It is in a particular degree striking, that while the theory of ethics involves some of the most abstruse questions which have ever employed the human faculties, the moral judgments and moral feelings of the most distant ages and nations with respect to all the most essential duties of life are one and the same"^b. Being led to seek for an explanation of the causes of the diversity of our moral action in a scrutiny of the agencies conducing to the development of the moral sense, we are impressed with the observation of an eloquent writer:— "That the early repression of all the higher feelings, and the influences constantly at work to develop the lower, fail not to

^a British and Foreign Quarterly Review, vol. xii. p. 227, from a Review of Whewell's *Elements of Morality*.

^b Elements of the Philosophy of the Human Mind, by Dugald Stewart, vol. ii. p. 480.

fix the standard of right and wrong at a very different point from that which a better education would have determined in the same individual." It is of importance to rightly estimate what this fact indicates; for from it we may infer that in individuals of such a class, while the functions of the understanding continue perfectly unimpaired, the passions may prove capable of inducing them to the commission of certain acts, whose criminality finds an accordance in those habitual exercises of which they may be presumed to constitute but the exaggeration. In the study of moral insanity, its evidences will be found to rest in certain operations, to which this accordance of the intellectual faculty appears wanting. On this apparent want of unison is based the difference between crime and this particular form of disease. Omitting those positive duties of life which are performed with the insensible approval of our moral faculty, we come to the question:—How far is the voluntary exercise of our emotive faculties regulated by our conceptions in reference to the objects to which they are attracted? We are satisfied that the intelligence, if not chiefly instrumental, is at least essentially involved in all deliberate exercises. It is not, therefore, easy to believe the emotive faculties can be altogether perverted as long as the conceptions which had previously, under similar circumstances, influenced their direction, continue unchanged; while, at the same time, it is by no means difficult to admit that the change in our conceptions may be alone manifest through the affections with which they are associated, when, as Dr. Duncan observes:—"Cases occur in which an estrangement of the moral sentiments takes place without any obvious lesion of the reasoning powers." If we go to the full extent of some writers, and allow the moral intelligence to be, *per se*, diseased, or "*Manie instinctive sans délire*," to be present, while the reasoning powers are *wholly* unaffected, what else can we suppose but that every case of confirmed viciousness is an example of such a form of disease? As in the mental, so in the moral constitution, the most marked differences are perceptible. It requires but slight research to satisfy the inquirer that many instances of crime are on record, and that many examples could be adduced to prove that such an original deficiency or natural perversion of the moral faculty appertained to some individuals, as argued a brutality rather than depravity of their dispositions. The chronicles of crime and pages of history too sadly demonstrate that instances are not wanting in which the most wanton and flagrant violation of the ordinary principles of humanity has been exemplified by the acts of many whose conduct otherwise could not admit

of a doubt respecting the existence of intellectual power adequate to appreciate the varied relations of their acts. Are such cases to be regarded as examples of "moral insanity"? If so, in what respect do they differ from others, which may be adduced as evidences of wicked, depraved minds? Observation satisfies us that the same vice for its accomplishment adopts means which vary according to the natural character, education, position in society, and various modifying circumstances affecting the individual. How true is the remark of Dr. Wigan:—"Place the individual subjected to morbid impulses in a position of impunity, so low or so high in the social scale, that he is either above shame or below it, and we see how much of the morality of society depends on positive law, how little on virtuous self-restraint." Society, in seeking to disguise from herself this truth, calls the acts of the one "wildness," of the other, "crime," attributing the first to the weakness of the head; the second, to the badness of the heart.

However open to disputation the origin of our moral nature may be, its use, and the means best calculated for its guidance, happily come within the observation of all. In the study of the latter we dissipate much of the obscurity of the former, and are practically convinced of the importance of recognising in the mental constitution that same harmonious coadaptation; which, witnessed in our physical organization, illustrates a mutual dependency of the various structures constituting the whole; and further displayed by the various operations in the world around us, proclaims a unity of design as indicative of the wisdom of the Creator.

Amongst the principal of those means by which our moral nature is affected, we may enumerate education and association. In regarding them as fitting subjects for psychological inquiry, we recognise the primary elements of national greatness and individual happiness. As man advances to physical maturity his mental powers simultaneously progress; moral and intellectual faculties become developed; desires, as contradistinguished from instincts, awakened. These, though identified with his moral nature, imply a power of reasoning, for, coincident with their development, a capability for the estimation of cause and effect is also manifested: as, however, no correct judgment could be arrived at without the due appreciation of data, entailing experience, one of two things must occur—either the instinct should guide the reason until such time as experience became established, or, as is the case, the value of data, *in initio*, be acquired from the experience of others, who by education lay the first step of that independent intellectual life, which,

through a similar process, had in their own persons become established. On this point we quote from Dr. Wigan:—"The slow progress to physical maturity of the human species, compared with that of other animals, seems a provision for their longer pupilage and more extensive instruction. If this duty be neglected, or if the discipline be defective or erroneous, the animal grows up, the most detestable combination of intelligence and physical force that infests the earth."

It is not our province to descend on a subject respecting which polemical arguments run high; yet considerations arise, from the nature of our present inquiry, which induce us to ask,—Has crime decreased in proportion to the spread of education? "Has eating of the tree of knowledge diminished the power of the Tempter?" Are the best instructed the least vicious? So far from such being the case, it has been found otherwise. If we investigate the cause of this, we are led to the recognition of the moral, even more than the intellectual constitution of man, and are impressed with the truth, that as there is an education of the intellectual faculties essential to man's temporal interests, so there is also the cultivation of his moral virtues no less essential for his present and eternal welfare. Proportionate to the maturation of the intelligence is the extension of its sphere of enjoyments; new desires are thereby awakened, new wants called into existence; how are these to be efficiently gratified or supplied, except by identifying man's moral with his intellectual progress, and so, while imparting to the masses knowledge, inculcating principles which may make them understand that moral restraint is a duty, and that their duty and interests are the same. Truly does Dr. Winslow write: "The chief means of controlling the passions, and of keeping them within just bounds, is to form a proper estimate of the things of this life, and of the relation of our present to a future state of existence, and of the influence which our actions in this world will have on our happiness hereafter." The best informed mind requires to be regulated and subdued;—regulated by the careful direction of the affective faculties to objects of legitimate attainment,—subdued by the habitual adoption of such practices as denote that to the corrective influence, which the various emotions exercise one on the other, have been superadded motives of a higher and more exalted character, which the intelligence is enabled to place in successful opposition to the natural desires. It is to be lamented that, notwithstanding the most careful mental and moral cultivation, abject depravity is not unfrequently manifested in the conduct of many having every incentive to a virtuous life. We

are not warranted, therefore, in declaring that training of this nature is powerless in preventing the operations of vice. It is, however, true that with such the desires may be inflamed without the understanding being strengthened,—the imagination excited without the habits being improved,—the cravings increased while the heart continues unpurified. Those cases are problems in human nature, whose explanation would involve an exposition of the laws by which the Creator determines his moral government of the world. As our estimate of a benefit is proportionate to our conceptions respecting it, so our moral culpability must be presumed, as being in a ratio to our capability of ethical decisions. In our psychological estimate of crime we cannot, therefore, reject the influence which education exercises, or should exercise, in fitting or enabling the mind to appreciate, not only the impolicy, but also the immorality, of any particular art.

The influence of association on man's moral disposition has been recognised by every one who has investigated the progress of crime. Profligates congregate together, their socialism has for its root real practical evil. The depraved in mind, and abandoned in morals, find mutual attractions; they reciprocally justify each other from their inward accusers, while establishing for themselves a system of morality up to which they act. In tracing the progress of crime we recognise the self-abandonment of the natural mind, in which the disinclination soon gives place to an inability to perceive moral distinctions; for, as guilt with its skilful sophistry stifles each remonstrance of "the still small voice within," the conscience, through vicious practices, becomes in its sensibility gradually impaired, and ultimately ceases to respond. Moral responsibility is not in consequence removed. Were we to admit it as being so, we would thereby confer a premium upon vice, for as a man became thoroughly lost to a sense of right would his immunity from that punishment be established, which it is not impossible might prove adequate at least to deter others from similar courses, should it even fail in reforming himself. The statement that similarity of disposition regulates intimacy has become a proverb: its truth, as an element in the formation of our opinions, cannot for a moment be lost sight of.

This intimate blending, intricate co-operation, and mutual dependency, which the various faculties of a healthy mind preserve one towards the other, must be carefully distinguished from their integral unity. We have already observed, "that in our analysis of mental activity, as evidenced through psychical actions, we are presented with a duplicate operation of

an integral power, contradistinguishing the moral from the intellectual faculty." This it has been our object to maintain, being entirely impressed with the wisdom, practical utility, and truth of Dr. Winslow's observation, "that these faculties, although cooperating and blending together, are so many distinct powers, differing in their modes of operation, and subject each in its turn to characteristic aberration; but as the mind can be only occupied with one idea at a time, it is as a *whole* affected when under the influence of any specific lesion"^a.

The "Mens sana in corpore sano" implies the free action of the mind, rather than its free existence, since the relationship of the healthiest mind to the cerebral organization is too well established. In like manner would we associate the moral and intellectual faculties, and consider the *normal mental condition to rest, not so much in the mutual independency, but in the capability for the free cooperation of those separate powers*. Now, the free actions of one individual, and the morbid actions of another, may be identical,—moral excellence characterizing both. Again, the insane acts of one may be the habitual and pre-meditated acts of another, vice being the leading characteristic of each. In what does their difference consist? We are not at all times able to detect the positive existence of disease, though we may justly infer its presence, or, having established its presence, can we always determine its nature. In such cases we form our diagnosis by negation, that is, by establishing *what the abnormal condition is not*, and so indirectly arriving at *that which it is*. It is thus that in our estimate of "moral insanity" the acts must be judged of by the motives, the motives by their relation to the mental condition, whose operations they may be fairly presumed as indicating.

We have already alluded to the value of comparison as an important element in diagnosis, the facility of arriving at truth being generally in the ratio of our capability of applying this test. In our investigation of the disease we proceed to consider, this will be abundantly manifested. All examples of moral insanity which the records of criminal jurisprudence supply may, we conceive, be ranged under one of the following heads:—

I. Cases in which the development of the moral feelings or affections appears as originally deficient.

II. Cases in which the perversion of the moral feelings or affective faculties appears to occur incidentally.

^a Psychological Journal, vol. v. p. 466. Art. "Law of Lunacy."

III. Cases in which the moral feelings appear to become universally disordered.

IV. Cases in which the moral feelings appear as partially diseased.

First. Education presupposes the existence of certain principles common to all, its exercise demonstrates that those principles are variously extended to each. There are many whom no amount of intellectual culture would render competent to the discharge of duties performed without difficulty by others. Except on the supposition that an original peculiarity of mental constitution exists in such individuals, this fact is inexplicable. An analogous condition is manifest in the operations of the moral faculty, inasmuch as individuals in all respects similarly circumstanced display the greatest possible diversity of character:—many without any unusual incentive to vice, and with every possible inducement to virtue, are observed to wilfully abandon themselves to evil practices, and from the commencement to manifest a disposition, presenting a strange compound of intellectual power and moral culpability. Their disease is *VICE*. With them Professor Heinroth's views are so far established, that moral depravity is not only the first step to, but the real cause of, their mental derangement. Pinel has directed attention to numerous examples of this nature. The identity of their operations with those of vice is complete, from which they are alone distinguished by the exaggerated malevolence they display; since, “without other inducement or advantage than the gratification of morbid appetites, acts of the most heartless and repulsive nature are by them being continually perpetrated.” That to individuals of this class the emotional theory of insanity applies, we do not doubt. The primary cause of their mental derangement can be assignable to no other source than that abnormal excitement, which, resulting from the uncontrolled gratification of the passions, too truly proves that they may be rendered so many “fevers of the mind.” The question of responsibility under circumstances of this nature is one closely identified with the preservation of public safety and morality. Indifference to, and negligence of, those moral commands on whose observance the welfare and peace of society depend, cannot be permitted. The interests of the community demand that they be preserved from the evil consequences which might ensue from the free gratification of vicious desires. The welfare of men requires what their universal voice declares—that when the animal nature is thus by the individual allowed to gain an ascendancy,

its powers should be chastened and subdued, in order that, being brought into subjection, the lessons of experience, if not the dictates of conscience, may thereby prove adequate to their better regulation. Fortunately, to this form of moral derangement the same rule applies, which in physical disease is found to prevail, for, as in the latter, when so perfect an analogy exists between organic affections as to render them closely similar, their treatment is usually equally so. In like manner we believe that in this affection, the same moral as well as physical discipline the Legislature ordains for the reformation of the vicious, is as equally applicable to their condition, except when it eventuates in the perpetration of a capital offence, and then it will generally occur, that more marked grounds for opinions are not wanting.

The Second Class of Cases, in which the perversion of the moral feelings incidentally occurs, is much less difficult in their recognition, than in determining their responsibility. When we consider the various powers, which, irrespective of religious sense, regulate the conduct of men:—That influence which society, the laws, public opinion, and our mutual dependency, exercise for the promotion of self-control, and the maintenance of the general welfare; and then reflect on the capability of self-regulation, which, consequent on such, is manifested to a certain extent in the conduct of many admittedly insane: we are struck with the preservative influence we each contribute to; and cease to be as much surprised as we otherwise would be, that when those corrective powers are removed, individuals in whom a defective capability of self-regulation is manifest, should by their conduct betray the same, and wanting that restraint which had hitherto existed, abandon themselves to the freer indulgence of those passions, that mark the natural disposition of man as being essentially sinful and depraved. This condition, we conceive, may result from either of the following causes:—

I. The abnormal excitement of the passions, consequent on some morbid physical condition.

II. The defective or imperfect development of the mind.

The first may result from either a morbid condition of the general system, or a special condition capable of generally affecting the system. We believe that many cases of hysterical mania are examples of the first class, and that many local diseases afford illustrations of the second. That causes capable of morbidly exciting the passions are adequate at the same time to also affect the mental powers, in their regulation of those passions, the majority of examples proves. The fact

is:—In many instances the general conditions of the system, and the influence such conditions exercise on the intellectual powers, are not sufficiently appreciated; and yet, we require no proof beyond the experience of our own persons to show that circumstances wholly unconnected with certain actions or particular states of mind, may lead to one, or eventuate in the other, when pending the continuance of those circumstances, the individual becomes incapable of opposing the morbid influence they exercise. Familiar examples of this form of disease are also manifest in the unusual phenomena which occur with some females during the period of utero-gestation, as well as the difference of disposition and perverted states of mind, that with them may be fairly presumed to be dependent on causes generally affecting the system, but having no special tendency to those particular manifestations to which they, from accidental circumstances, may be determined.

Morbid conditions affecting the intellectual system in a manner similar to that which Esquirol and Georget describe as indicating the initiatory stage of mania, may, from whatever causes these morbid conditions proceed, in their primary development, be manifested exclusively through the emotional faculty. It is quite possible that pending the progress of cerebral disease, appearances of perfect physical health be presented to the most careful scrutiny. Why disease of the brain should, not unfrequently, manifest its presence through emotional operations, Pathology fails to explain. Its doing so is too often demonstrated by the fact, that changes in the affections, sad, lamentable, and at the time of their occurrence inexplicable, have been found to precede unmistakable and fatal outbursts of insanity. Heinroth and Hoffbauer have observed a form of mental derangement, of which the latter thus writes: “It is clear that mania may exist uncomplicated with mental delusion; it is in fact only a kind of exaltation, a state in which the reason has lost its empire over the passions, and the actions by which they are manifested, to such a degree that the individual can neither repress the former, nor abstain from the latter. It does not follow that he may not be in possession of his senses and even his usual intelligence, since, in order to resist the impulses of the passions, it is not sufficient that the reason should impart its counsels,—we must have the necessary power to obey them”^a.

Before arriving at any conclusion in reference to cases of this nature, it is of importance to consider fully:—

^a Ray, *Medical Jurisprudence*, p. 158.

I. Those previous circumstances which have influenced or tended to form the moral character.

II. Those special circumstances which have eventuated in the particular development of its affective operation.

On the *first* query—The psycho-physical relation or temperament, the influence of education, association, and habit, as establishing the individual mental constitution, must, in their mutual reactions and collective operations, be duly estimated.

On the *second* query—All physical causes adequate to react on the material organ for intellectual expression, require the closest investigation. The influence an ascertained morbid condition is capable of exercising, not on an ordinary intelligence, but on the mind of the individual accused, demands the most careful scrutiny,—previous to determining the relation of the ascertained mental constitution to any particular development of its moral faculty. The question of responsibility in cases of this nature is therefore one involving the nicest exercise of psychological judgment.

The Third Class of Cases, in which the moral feelings appear to become universally disordered, is closely associated with those last noticed. Their diagnosis rests on the recognition of an independency in existence, but unity in action, of the separate mental faculties as being characteristic of mental and physical health. Were proofs required to establish the re-active influence mind and body mutually interchange, we might quote a case of unusual interest recent in the recollections of our professional brethren in Dublin, in which this proposition was painfully illustrated in the person of an educated gentleman, who, pending the constitutional inability for moral control, consequent on the presence of dyspepsia induced by an over-wrought mind, suffered from such a perversion of the moral principle as led to the indulgence in irregularities which no one doubted his ordinary life was wholly opposed to, and his unclouded intelligence would have altogether repudiated. When we reflect on the difference between men which education, association, and habit, are capable of producing, we are led to the conclusion, that motives or inducements to crime capable of influencing one individual, are perfectly harmless in their operations on another; and that acts indicating a wilful viciousness in one, too plainly demonstrate a morbid want of self-control in another. The comparison of those acts regarded as denoting the moral derangement of an individual, by determining the relations they may bear to the previous conduct and general history, lays the groundwork on which the diagnosis of this general condition rests. This is a question which, while for its

rational decision coming within the reach of an ordinary intelligence, at the same time, for its medical solution, demands a close examination of the personality for the detection of disease; since observation assures us, that many general and special sympathies may be evoked through its existence, adequate to so disturb the mental equilibrium that the moral power ceases to be regulated or controlled. It is true, that in life many are to be met with to whom the ordinary observances of society become matters of indifference, who, from having preserved all appearances of moral rectitude, seem to wilfully abandon themselves to vicious practices. If the intelligence approves or cooperates with such immoral acts, of whatever nature they be, they thereby constitute so many illustrations of premeditated vice. If the intelligence does not approve, and the immoral acts be opposed to its dictates, does not the commission of such acts argue as much the inability of the intelligence *quoad* the morals, as any independent morbid condition of the distinct moral faculty.

So far we believe our views to coincide with those of Hoffbauer and Dr. Forbes Winslow, who have justly observed, that at the moment of the *insane* immoral act, the perception is also disturbed. There is nothing in the analogy of disease to lead to the inference, that in cases in which the moral faculties are chiefly involved, the intelligence should be presumed as sound; because no other evidence of disease is present except that manifest through the defective morals. On this particular point we adopt the words of Ray:—"Notwithstanding the correctness of his conversation, and his plausible reasons for his singular conduct, a strict scrutiny of the actions of a patient labouring under moral insanity, if not of his words, will convince us that his notions of right and wrong are obscured and perverted, and that his own social position is viewed through a medium which gives a false colouring to its whole aspect." In proof of this we may observe, that the majority of well-marked examples of moral mania have eventuated in other more marked derangements of the intelligence. Thus, the oft-quoted case of Frederick William of Prussia is adduced as an example of this form of disease; but surely any one who studies its different peculiarities will admit that there was abundant evidence of his general mental unsoundness, equally manifested by his monomaniacal desire for tall recruits as by his brutal conduct to his son. Dr. Duncan, in his essay on "Moral Insanity unaccompanied by any obvious symptoms of Intellectual Aberration," gives the details of an interesting case, in which the moral relations of the sufferer appeared by him to have been *wholly*

misconceived, while the moral perversion, consequent on this misconception, was the principal evidence of the disease. In his observations referring to this case, Dr. Duncan asks:—"Are we justified from these things in concluding that there was no morbid condition of the understanding all the time?"^a and adds, as his opinion, that which the majority of examples proves:—"The morbid condition of the understanding, though obscure, was, nevertheless, real."

The fact that the knowledge of right and wrong is not prominently present to the mind, *per se*, affords no proof that the moral principle is diseased. Our previous observations have shown, that the habitual indulgence of evil habits may stifle the voice of conscience, and overcome those feelings which the commission of the same acts would occasion to less hardened individuals. Human life may be held at a pin's fee; and as we have sad evidence to infer, a graduated scale for its destruction be adopted. "The abject atrocity of an act, its voluntary nature, its perfectly gratuitous character, argues nothing in favour of a diseased moral principle further than vice, wickedness, and crime, are competent to such an end;" nor does the circumstance of a man's apparently correct life of itself offer other than a presumption that the abandonment of those principles by which he had been regulated is the result of disease, even though it be confirmed by the seeming want of motives for transgression. Inducements to crime may not, to the same extent, have been previously presented, and our incapability of discovering motives is no proof of their non-existence, as was established on the trial of Courvoisier, who was convicted for the murder of Lord William Russell. The non-existence of motives elicited the sympathy of many, it being contended by counsel, "that the most trifling action of human life had its spring from some motive or other;" yet eventually proofs of his guilt and an abundance of motives were not wanting. How are cases of this nature to be distinguished from the operations of vice? We reply, by a careful system of analysis:—

I. Of those Agents capable of affecting the Personality.—When the fact of an hereditary predisposition,—the presence or absence of constitutional or organic irritation,—the pre-existence of any particular disease, or the previous receipt of any injury, especially if the pre-existence of that disease, or the receipt of that injury was capable of affecting the nervous system.

II. Of the Relation between the Intellectual and Moral Power.—When the education, association, habits, and general moral

^a Psychological Journal, No 22, p. 279.

exercises, as constituting the previous history, must, in their contrast with the special character of the particular acts to be investigated, determine not only the ability of the intelligence to perceive their culpability, but to prevent their commission.

The Fourth Class of Cases, in which the moral feelings or affections appear as partially diseased, demands the closest application of those principles just quoted, as for their detection the employment of comparison is primarily important.

If we look at the broad face of creation, do we not on all sides recognise evidences of exquisite wisdom in the universal adaptation of the many units forming the whole? Do we not perceive a beautiful harmony to pervade the operations of nature,—proving that in the world external to man there is a certain conformity to a fixed standard; and leading us to the further inference, that in the world internal to man equal grounds for a similar opinion exist? The laws of nature are truths, however they may be misunderstood,—our moral laws are equally as immutable, however corrupt the conscience may be. It is essential that a similar harmony be regarded as indicative of the healthy, well-governed mind; for otherwise, many acts originating from a diseased condition might be attributed to a vicious disposition, and many vicious practices escape without their due reward.

We have seen in our investigations respecting monomania that the evidence of unsoundness of mind in one may rest in opinions which with another would be perfectly inadequate to argue such a mental condition. In a similar manner a perversion or defective operation of the moral faculties may manifest itself by actions fully consonant with soundness of mind, and completely identical with the ordinary operations of vice. Dr. Rush observes:—"There are persons who are moral to the highest degree as to certain duties, but who, nevertheless, live under the influence of some one vice. In one instance, a woman was exemplary in her obedience to every command of the moral law except one. She could not refrain from stealing. What made this vice more remarkable was, that she was in easy circumstances, and not addicted to extravagance in anything. Such was the propensity to this vice, that when she could lay her hands on nothing more valuable, she would often at the table of a friend fill her pockets secretly with bread. She both confessed and lamented her crime"^a. This particular manifestation of defective moral power, or "cleptomania," as systematic writers have termed it, is universally admitted, and

^a Ray, *Medical Jurisprudence*, p. 171.

is at times advanced as a plea in extenuation of certain apparently criminal acts. It is not requisite to adduce examples. Their diagnosis rests on the recognition of this harmony we have premised. We enumerate the chief points of difference. I. The criminal theft is the consummation of premeditate criminal desires. The insane act the result of a passing opportunity to gratify a morbid propensity. II. The criminal acts accord to those of a generally vicious habit. The insane act opposes the ordinary individual exercises. III. The criminal act is accomplished for the ultimate advantage to be derived from the illegal possession. The insane act is unthought of beyond the pleasure experienced in its perfection. IV. The criminal steals that which may be useful, and subsequently conceals his deed. The insane act has no reference to ulterior advantages, and seeks not to guard against eventual discovery. V. The criminal in his select robberies has his associates. The insane in their indiscriminate appropriations admit of no accomplices. VI. The criminal will persist in the denial of his guilty practices. The lunatic, though anxious to conceal his present intentions, seeks not to disguise his previous success.

Another much more serious and fortunately a rarer form of this partial perversion of the moral sense is manifest in that disease which has been termed "pyromania," whose chief feature consists in an irrational propensity to incendiary practices, consequent on an insane love for conflagrations. Many writers have alluded to this particular affection, and offered various suggestions respecting its pathology, some attributing its existence to an insatiable desire for light, caused by venous repletion, and others associating it with certain post-mortem appearances which indicate the base of the brain as that part of the cerebral structure which is more immediately implicated. This is an affection which must be studied on the same principle as that we have just described. As an isolated form of disease it is happily of rare occurrence, which is proved by the fact that lunatic asylums so seldom suffer from fire; as an accompaniment to or result of other more general mental disorders, it is occasionally met with. In the case of Martin, the burning of the cathedral was the consummation of his delusive suggestions, a secondary, not primary morbid manifestation.

To distinguish such a morbid action from the ordinary operation of the incendiary demands a knowledge of the individual habits, position, and relation, to any motives conducing to the act; the investigation of all circumstances previous and subsequent to its commission. The latter are of especial importance, for, when the insane act is being accomplished, the pyromaniac

manifests such monomaniacal enjoyment of the scene as leads him to witness the success of his efforts; while the criminal speedily betakes himself to flight, and endeavours to conceal his appreciation of the transaction. How far partial responsibility attaches itself to acts of this nature, and to what extent the corrective discipline of criminal lunatic asylums might tend to their prevention, must be determined by the individual merits of each case. There is every reason to infer that the mind adequate to premeditate and perfect their accomplishment might be rendered the more capable of resisting those impulses which lead to their commission.

Other forms of partial moral mania are to be met with, involved in greater difficulty for their detection than those just described, inasmuch as their manifestations coincide with the ordinary operations of vice. *Erotic mania* may be ranged under this class. In this form of disease, not only may the nature and relations of the insane criminal act be fully understood, but the general intelligence conduce to its accomplishment. An idea, which many writers with little philosophy and less observation formerly promulgated, is now exploded,—continence is no longer considered as a state of violence to nature. That a cultivated understanding and a vigorous mind will seldom suffer much from such a cause, observation of life establishes in the persons of many whose vocation places them above suspicion. Such an affirmation, put forward as a general principle, must not be regarded as being intended to propound a positive rule. It is a physiological fact that the most powerful of all physical influences is that which the sexual function is capable of exercising on the intelligence. This is illustrated by the changes in disposition and thought attendant on the development of puberty; as well as by the mental declension which is usually observed to follow on the abuse or undue excitement of the generative system. Mind and body thus mutually influence and react on each other. Education, reflection, habitual self-control, can so school the passions and subdue the emotions, that, pending physical health, a perfect mastery is acquired over each somatic suggestion. A man may thus pass through life experiencing emotions which he successfully subdues, when supported by principles adequate to do so. These emotions, from their continued negation, are eventually placed in such complete abeyance that they may be said to have scarce an existence. When, however, from any cause the healthy relation between the material and immaterial constitution becomes interrupted, as it frequently does in advanced life, the following phenomena may be observed in some instances to ensue. Re-

sulting from the presence of local or general irritation acting specially on the sexual apparatus, the nervous sympathies connected therewith become to a corresponding degree aroused, and in the ratio that they are so, capable of attracting the attention to their excited condition. As the attention becomes engaged, the local irritation increases. Unless suitable remedies be applied, on the increase of the local irritation follows a morbid excitement of functions, adequate to resist the effort of the will for their control. The animal nature increases in power, while the intelligence is at the same time rendered less capable of resisting its morbid emotions, which have so far attained a double force, from the actual strength imparted by the local disease, and the relative strength consequent on the diminished powers of the will. It is not difficult to admit that as such a state advances, the consciousness of guilty desire may coexist with an incapability for its resistance ; and that thus, men whose previous lives were opposed to vicious practices, may be morbidly attracted to the commission of crimes, that may compromise an unblemished character, and disgracefully terminate an honourable career. It may be asked, should not a sense of religious duty and moral rectitude enable the person so afflicted to bear his suffering with resignation, and give him strength to oppose the progress of vicious desires ? Surely our daily attendance on the bed of sickness satisfies us that such is the case. All, however, are not equally impressed with that religious sense which sheds its halo round creature woe. All are not so mentally constituted that they can bear up against the combined influence of physical excitement and mental debility. There is no more painful, no more melancholy disease, to witness than this. Medical writings abound with instances in which the existence of local irritation,—the presence of, it may be, previously undetected organic change, has satisfied impartial medical men that a blasted reputation, perhaps an untimely death, might have been prevented by the application of those remedies which medicine places within the reach of the least experienced of her votaries.

In the medico-legal investigations which may arise on such cases, the physician has a most trying and responsible duty to fulfil. Unhappily, as already remarked, age is not always characterized by virtue, nor are years a guarantee for that which is right. When on criminal trials a plea of this affection is set up, it is frequently the presence or absence of organic disease, be it general or local, which decides the case. In every instance of doubt, the previous history, general character, and existing symptoms, will enable the physician to at least test

his opinions, and so confirm his judgment. None but medical men are competent for investigations of this nature. Most fully do we respond to Dr. Holland's observation: "Scarcely can we name a morbid affection of the body in which some feeling or function of the mind is not concurrently engaged. No physician can rightly fulfil his duties without an adequate knowledge of and constant regard to those important relations."

The subject of moral insanity is one of almost infinite complexity. In the relative and mutual restraint the moral feelings exercise one on the other, and the capability the intelligence possesses of directing the whole, the character of an individual rests. To analyze the power of each passion or emotion, and to estimate the influence they possess, would require the scrutiny of a single character for a long life. To subdue and regulate the passions is the end of religion; to enable the intelligence to do so should be the object of education. In our study of this disease we cannot reject somatic influences, however obscure their operation be. In them we view but the offspring of transgression, which imparted to man the knowledge of good and evil, but by no means assured him his Creator intended he should have a full and satisfactory knowledge of His moral government of the world.

In the practical application of this inquiry, we must be prepared for the meeting with many cases full of doubt, which our best and most anxious investigations may fail to elucidate: under such circumstances to complain of any difficulty or seeming contradiction is only to complain that human intelligence cannot pass those bounds which the wisdom of the Creator has ordained, and though it may thus happen that at times the innocent suffer, we will indulge just grounds for hope that such examples must be rare indeed; and on the other hand, should mercy incline the scale of justice, and crime revel in the success of ill-deeds, we have both divine assurance and human observation to attest, "that seldom hath punishment, though lame of foot, failed to overtake a villain."

I shall terminate these remarks by the following conclusions, which I deduce from the previous observations:—

I. By the term moral insanity we express mental unsoundness, chiefly evidenced through the moral or affective faculty.

II. Though the moral and intellectual perceptions are capable of independent exercises, yet in their effective operations they mutually blend together and co-operate.

III. Analogous differences are observable in the development of the moral as of the intellectual faculties.

IV. Those differences are such as seem to impart a special character or disposition to each.

V. The intelligence is, in the healthy, properly regulated mind, capable of controlling and directing the moral exercises.

VI. The moral or affective faculty, being closely associated with the sensational, is, therefore, in nearer relation to the personality.

VII. Diseases affecting the personality may occasion morbid changes in the moral disposition without immediately involving the intelligence.

VIII. From the intimate blending, intricate co-operation, and mutual dependency, of the separate mental faculties, causes producing abnormal action in the one, unusually eventuate in causing derangement of the other.

IX. Though in derangements of the mind the moral faculty appears primarily and solely involved in many instances, the non-development of intellectual unsoundness, through other manifestations, cannot be received as proof of its non-existence.

X. The sense of moral perception is found to vary according to the nature and extent of the guidance it may have received.

XI. The moral faculty, though incapable of determining positive duties, is adequate to oppose intellectual suggestions in such exercises as more immediately involve the moral perceptions.

XII. A want of accordance between the moral and intellectual faculties may proceed from either undue excitement of the moral, or inefficient exercise of the mental powers.

XIII. Those causes, adequate to affect either faculty, must be carefully sought for previous to offering an opinion.

XIV. That as those causes involve questions of a physiological, pathological, and strictly medical nature, irrespective of their ethical, logical, or legal relations, their proper estimation requires such a combination of knowledge as none other than a psychological physician could be reasonably expected to possess.

ART. VI.—*Some Observations on "Hydatids" in the Human Body.* By THOMAS HAYDEN, F. R. C. S. I., Lecturer on Anatomy in the Original School of Medicine.

MANY circumstances contribute to invest with a degree of interest the development of hydatids in the human body; and

not the least amongst these is the cursory manner in which the subject has been treated by most zoologists. Rymer Jones dismisses it with a passing notice; so does Carpenter. It has, indeed, received its full measure of importance from surgical writers, more especially from Cooper, whose able treatise on "Hydatid Tumours" of the female breast must ever remain a standard reference for surgeons. Such notices, however, are purely surgical, and far too general to satisfy the inquiring mind of the comparative anatomist, whose object should be to study a parasitic formation not so much in its causes and effects, as in its structural development, its vital functions, and its zoological relations.

In the hope of being able to contribute something towards supplying this obvious want in the catalogue of the medical naturalist, I have undertaken some observations on the subject, and although I cannot presume to offer the result as definitive, it may still serve the useful purpose of pointing out the way to others.

Many ancient authors mention "hydatids," but they were evidently ignorant of the animal nature of these growths, some believing them to be the result of a commixture of serum and mucus under peculiar circumstances; others, that they were glands, the dilated extremities of blood-vessels or distended cellular tissue. Bremser^a is of opinion that hydatoid formations occasionally originate from the last-mentioned sources, but that the name "hydatid" should be applied exclusively to a vesicle filled with a liquid clear as water, but of variable density—this vesicle being included in a capsule with the walls of which it has no connexion, and which, itself, is part of the surrounding structure. The animal or parasitic nature of such vesicles appears to have been discovered towards the end of the seventeenth century, by Hartmann, Malpighi, and Tyson; they occasionally undergo a process of morbific change, first becoming opaque, then shrinking, the contents assuming a yellow colour and greater density, and finally degenerating into a calcareous mass enveloped in a firm capsule.

The hydatid belongs to the *Acrite* division of animals, and to the class *Sterelmintha*, of which it constitutes the *cystiform* order. Two species of hydatid have been found in man, the "*cysticercus*" and "*echinococcus*." The cysticerque is common in the hog and ape, but rare in man; "On les trouve rarement chez l'homme" (Bremser); it inhabits a bag or capsule found in the intermuscular areolar tissue and also in the brain; but this

^a Sur Les Vers Intestinaux.

capsule, in the opinion of the last-mentioned writer, is an adventitious growth resulting from the irritation produced by the animal, because bloodvessels are seen coursing to it from the surrounding tissues, and because it can be dislodged from its bed only by breaking up certain connecting fibres. On laying open the capsule its inner surface is found perfectly smooth, and lubricated by a quantity of thin fluid, the animal is retracted into its vesicle, but a hard white spot on the surface indicates the situation of the body; if the vesicle be now placed in warm water, the temperature of which is kept up for a certain time, the creature soon protrudes its head, short neck, and wrinkled body, terminating posteriorly in the "caudal vesicle" which serves as its retreat. The head appears as a conical projection, not unlike the glans penis; on its basic margin are four suckers, whilst on the extremity is a smaller conical protuberance, round the middle of which is fixed a double fringe of hooks. Behind the suckers is the short neck, and then comes the cylindrical body encircled by annular folds, like those formed by the retracted integuments of the penis. When the animal retires into its caudal vesicle, the first part that recedes is the extreme point of the hooked cone, then the hooks and suckers, and lastly, the body is folded in, leaving on the surface of the vesicle only the white spot above mentioned to indicate the point of retreat. When it comes forth from its hiding place, the parts are presented in inverse order—the last receding being the first to reappear. The "echinococcus" (acephalocyst of Laennec) occupies a lower place in the zoological scale; it is destitute of the cephalic extremity and corrugated body so characteristic of the "cysticerque;" it is congregative, occupying in large numbers, included in a common capsule, the solid abdominal viscera—the liver, kidney, uterus, &c. The walls are firm and elastic, enclosing a quantity of fluid and microscopic globules, in which minute particles are discoverable, representing obviously a still younger generation of acephalocysts. Cases are on record, where the hides or tunics of the parent vesicles have been expelled from the body in large quantity, a circumstance only explicable on the assumption of their having, at some antecedent period, undergone dehiscence or rupture for the purpose of liberating the contained young. The fluid contents vary in colour and density, and there is no apparent outlet from the cavity. Bremser proposes for the genus under consideration the name "splanchnococcus" a term which well conveys the distinctive habitat of the animal, and for its two species the names "echinatus"

and "lævis," the former found in the lower animals only, and presenting, at an early period of its development, hooks and suckers resembling those of cysticerci; and the latter peculiar to the human species, and devoid of those instruments of prehension and attachment.

In the early part of this session, whilst engaged in the dissecting-room in demonstrating the glutæi muscles of an aged female subject, I encountered a great number of ovoid cysts dispersed through the fibres of the glutæus maximus; these, on close examination, proved to be exquisite specimens of the "cysticercus," varying in length from one-half to three-fourths of an inch, and about one-fourth of an inch broad at the larger extremity; they were dislodged from their beds by the slightest touch of the finger, and had not apparently any organic connexion with the surrounding structures.

I preserved two of these specimens for examination at a convenient opportunity. The cyst was smooth on the exterior, and semi-transparent, permitting a view through its walls of a small, opaque, yellowish body, attached to the internal surface, and floating in the contained fluid,—the whole appearance bearing a not very distant resemblance to the human ovum at an early period of development. The point of attachment of the contained body was at the larger extremity of the cyst, and was marked on the exterior by a white opaque spot the size of a pin's head. On section the walls were found to be composed of two tunics, the outer of which was firm and resisting, whilst the internal was soft, smooth, and glistening, like a serous membrane; the former sent in an imperfect septum, which divided the cavity into two compartments, each containing a distinct cyst formed of the inner membrane, and filled with a colourless fluid; this was neutral in reaction, and floated a number of white granules, which, examined with a magnifying power of 250 D, presented a dark border and transparent centre. The external coat was distinctly fibrous, composed of wavy bands, which disappeared in great measure under the action of acetic acid, leaving in the field a number of curly elastic filaments. The inner tunic was composed of granules and cells, the latter averaging 1-2600th of an inch in diameter, presenting a double outline, and containing some granular matter;—the appearance was not unlike that of fat cells with a thin fluid interposed between the cell-wall and the oily contents, but it was not affected by ether. The opaque body, already alluded to as seen from the exterior was now examined: it was pyriform, and attached by the smaller extremity

to the internal surface of the cyst by means of a double lunated fold of the inner tunic, which extended on either side of the pear-shaped body as far as its large extremity. The free or concave border of each fold contained a fibrous filament obviously derived from the external coat.

By a curious coincidence, a fine specimen of hydatid kidney was furnished by a male subject in the dissecting-room a few days subsequently to that above described, and thus the opportunity was afforded me of examining the second species of hydatid, described by Bremser under the name of "echinococcus." I shall not describe the kidney itself, which my colleague, Mr. Ledwich, promises to bring under notice on a future occasion, but shall content myself with a few observations on the contained cysts. I carefully extracted two of these; one was as large as a small orange, and perfectly spherical; the second was of a similar form, and three-fourths of an inch in diameter. The external appearance bore a resemblance to that of a boiled onion; and like it, too, the layers, of which there were four, admitted of being peeled off each other, and when so separated they resembled the elastic cornea, both in elasticity and transparency. After the three outer layers had been detached, a perfectly transparent bag remained, containing a clear fluid with a cloudy granular precipitate. On laying open the cavity the inner surface was found smooth, with here and there some white granular matter adherent to it; this latter, examined with the microscope, appeared to be composed of transparent cells of various forms and sizes, but chiefly spheroidal, and of an average diameter of 1-3000th part of an inch. I succeeded by pressure in rupturing the larger cells, and thus gave exit to others of a smaller size, but I failed to detect anything like the pediculated arrangement of the contained cells described and figured by Busk; perhaps owing to incipient decomposition. The cells were not altered by acetic acid, or by ether, and the liquid occupying the cavity was highly acid. A portion of the tunics examined microscopically presented a granular appearance; and, on being teased out with needles, an indistinct tendency to fibrillation.

In connexion with this subject the first question that suggests itself to an inquiring mind is, what proof do we possess of the animal nature of hydatids? May they not be regarded as vegetable growths? In order to answer these queries satisfactorily, we should first be in a position to settle the long- vexed one of what distinguishes an animal from a vegetable. But as we possess no distinctive character of universal applica-

tion between the two great divisions of the organic kingdom, I fear we must rest content with a probable assumption, instead of proof, in the case of the hydatid which verges on the confines of both. Like the vegetable, it is nourished by fluid aliment; like the vegetable, too, it is immersed in this fluid, or in substances saturated with it. Its nutriment is taken up by absorption from the exterior; it propagates by gemmules or buds; and it is devoid of visceral organs: all which characters it possesses in common with vegetables. The various attempts that have been made to offer a theoretical distinction between a vegetable and an animal are too well known to need repetition. The most ancient are those of Aristotle, Linnæus, and Cuvier; and the most modern that of Valentin: "An animal is capable of entering into independent relations of exchange with surrounding objects; a vegetable is not." We gain little from this definition, however, towards settling the point at issue, inasmuch as we possess no means of determining whether the hydatid does exercise such discretionary power. Taking for granted, then, that the hydatid is an independent organism, having no vascular connexion with neighbouring parts, we may be warranted in assuming it to be of an animal nature from the following considerations,—one of its tunics at least, the external, possesses all the physical characters of an animal structure; it is developed only in the animal body, nothing resembling it having ever been found in a vegetable substance; and lastly, it has been observed to exhibit contractility under appropriate stimuli. The agency by which the head and body are protruded would appear to be the contraction of the external fibrous coat acting on the contained fluid, and, it may be, that of the two marginal bands occupying the concave border of the lunated folds above described. The retraction is probably due to the elastic tissue so plentifully dispersed through the outer tunic.

Our knowledge of the origin of cysticerci is limited to mere conjecture; nor is that of the pathology, diagnosis, or treatment of these growths in the living body in a more advanced condition. It would appear that persons in apparent health may be infested by them; and again, that they may coexist with the most diverse diseases,—consumption, apoplexy, &c. The symptoms present nothing specific, and appear to result simply from mechanical pressure,—such as a sense of weight and fatigue in the limbs, epilepsy, convulsions, &c. If their presence should happen to be manifested in the living body, a complete change of regimen, with the view of producing the

calcareous degeneration above described, would appear to be the most rational indication.

The symptoms resulting from the presence of the "echinococcus" are more formidable in proportion to the greater size and number of this species; but here, also, they are entirely of mechanical origin. The hemorrhage which marks the presence of these bodies in the uterus is purely of this character; and it is certain, that after their extraction or spontaneous expulsion, the organ resumes the healthful discharge of its functions.

I have already ventured to acknowledge the debt which practical medicine owes to Sir A. Cooper for his masterly essay on Diseases of the Female Breast, including the hydatid tumour; Velpeau^a, however, throws doubt upon the accuracy of his observations, and expresses an opinion, that the cases mentioned by this distinguished surgeon as instances of hydatid tumour, were really so many examples of serous cysts, founding this opinion upon the absence in Cooper's works of all allusion to the latter class of tumour, which he believes to be of frequent occurrence, whilst the "true hydatid tumour" of the breast he has never seen. It is to be regretted that so able a surgeon as M. Velpeau, and possessing, as he does, such an intimate acquaintance with all the appliances of modern investigation, should have failed to favour us with a description of what constitutes a "true hydatid tumour." Until he has done so from microscopic observation, and we have failed to recognise the likeness in the picture drawn by Cooper, it appears to me that an unquestioning acceptance of his statement would be unwarranted by facts. I do not hesitate to say, that in the absence of microscopic observation, of which, in the investigation of this subject, Velpeau appears to have availed himself as little in the year 1854, as Cooper did in 1829, nothing could come nearer a faithful description of the "echinococcus" than Sir A. Cooper's account of the "globular hydatid."

ART. VII.—*Observations on Epulis, illustrated by Cases of the Disease in the Upper Jaw.* By SAMUEL G. WILMOT, M. D., Surgeon to Steevens' Hospital, Lecturer on Surgery in the Carmichael School of Medicine.

THERE is no class of diseases which ought to excite more interest and command more attention than the various growths

^a *Traité des Maladies du Sein et de la Région Mammaire*, 1854.

which spring from the upper jaw. Formerly these diseases were not made the subject of much consideration, from the belief that, when of any magnitude, operative interference was hazardous, and not likely to be attended with ultimate success: but experience has taught otherwise. We know now that excision of the upper jaw, whether in whole or in part, is an operation easy of execution, and free from immediate risk; that recovery from its effects is remarkably rapid and complete; and that, except in the case of extensive malignant disease, ultimate success is as apt to follow it as any similar undertaking in operative surgery. The doubt is no longer as to the possibility of the excision of the superior maxilla, but as to the diagnosis of the various tumours demanding that operation. The great difficulty consists in deciding between the diseases of a benign and those of a malignant nature, with a view especially to satisfactory prognosis. The microscope, it was supposed, would have been the means of completely dispelling the cloud which obscured our diagnosis, and intercepted our view as regards prognosis; but the result has been for the most part disappointment. This instrument, valuable though it be in many respects, can, with its present capabilities, do little more than afford corroborative testimony as to malignity or not, and particularly, perhaps, in the case of certain growths connected with the jaws. Many a disease has been declared benign by the microscope which has ere long contaminated the system, and proved destructive by secondary development in remote organs and parts. How frequently has experience proved certain fibro-plastic and epithelial growths to be truly malignant, in which the microscopic characters of cancer were wanting! The positive evidence furnished by the microscope is, no doubt, most satisfactory by confirming opinions otherwise formed, or even by clearing up doubts which pre-existed; but its negative evidence is calculated rather to mislead, since it may justify conclusions which are false regarding the prospects of the disease returning.

The distinction between diseases of genuine malignancy and those which *only* approach to that character—between cancerous and cancrioid growths—has been drawn by the microscope rather than founded in practice. Practically there is no *essential* difference between these two varieties of disease; the distinction between them consists in the relative rapidity of their primary development, and of their reproduction; both are malignant, in the strict sense of the term, being similar in kind, only different in degree.

These observations are not intended to disparage the mi-

croscope, but to show the amount of practical value to be attached to its disclosures in the diagnosis of morbid growths. The cause of true science is best upheld by taking enlarged and unbiased views. Statistics clearly prove that we must not place too much reliance upon the microscopic characters of abnormal structures, but that for a correct diagnosis and prognosis we must, as heretofore, depend in a great measure on their coarser features, and on certain particulars in the history of their origin and progress. The consideration of this fact should not damp the ardour of those who have so creditably devoted themselves to microscopic morbid anatomy; on the contrary, it should stimulate them to persevere in the path of this research, and there is little doubt, considering what has already been achieved, that ere long microscopy will yield as abundant fruits in abnormal as it has done in normal anatomy in botany and in chemistry, and that thus our diagnosis of morbid structures will become, instead of uncertain, precise and conclusive.

The morbid growths which are connected with the upper jaw, and demand operation, may be divided into those which take their origin from the gum and alveolus, and those which spring from the antrum, its interior or its walls. The first class includes the various forms of epulis met with in practice, and to these the present remarks will be confined.

It is to be regretted that this subject has not been dealt with by writers in any manner befitting its importance in a surgical point of view. Many excellent works on surgery give but a very general and superficial sketch of epulis, while others either pass it by altogether, or give to it but a passing notice. The chief instruction upon this disease is to be found in scattered fragments through the works of some of the older authors and in more recent contributions to different journals and periodicals, which to find out requires the expenditure of no little time and trouble. The knowledge thus gleaned from so many separate sources is crude, and far from being complete.

The growths which come under the denomination of epulis present two species: one has its origin primarily in the gum, the periosteum and bone of the alveolus being secondarily implicated as the disease progresses; the other springs primarily from the periosteum and bone,—it is an outgrowth from the fibrous tissue and bone of the alveolus; this latter assumes the form of a large tumour, which presents on section a distinct fibrous structure interspersed with bony spiculæ.

The first species of epulis is met with under two characters, —benign and malignant.

The benign form appears to be merely an hypertrophy of the gum, in the first instance. A small hard tumour arises upon the gum, generally between two of the teeth; as it enlarges, it separates the teeth, loosens them, and adheres to their neck; by degrees a considerable tumour arises, which projects either forwards or backwards towards the mouth. Its usual situation is on the front of the jaw. The surface of the tumour is at first smooth and even, but as it increases it becomes tuberculated, rough, and ulcerated. When the disease has advanced to a certain extent, the sockets of the teeth undergo partial absorption, so that not only the teeth themselves, but the alveolar ridge, become yielding and movable. When not attended to early, this disease will go on spreading, until it engages several teeth and a considerable extent of the alveolar border of the jaw. Its progress, however, is slow.

Care must be taken not to confound this morbid growth with that swelling of the gum which obviously depends on the irritation from decayed teeth: in the latter affection a certain extent of the gum becomes swollen, spongy, and vascular, and separates from the teeth, presenting a "cock's-comb-like" appearance; this unhealthy condition disappears when its exciting cause is removed, whereas epulis most frequently arises when the teeth are perfectly sound. There is but one line of treatment to be pursued in the form of epulis under consideration, viz., to remove the tumour completely with the bony structure all around it. The disease has a remarkable tendency to return, and unless the whole of it, and more than the whole, be taken away, it will recur again and again. In the very early stage, before the diseased structure of the gum forms adhesion to the teeth and their sockets, it may be extirpated with the knife, the parts being afterwards well cauterized, and it may not return. There is one remarkable feature, however, in this affection, which must not be lost sight of in dealing with it, namely, its convertibility into the malignant form by being subjected to continual irritation, particularly that caused by caustics. So readily does this sort of epulis assume malignant characters, that it is doubtful how far the term benign can with strict logical propriety be awarded to it. A tumour of the gum, which has remained perfectly innocent for a great length of time, will suddenly change its disposition after being subjected to frequent ineffectual attempts at destruction by caustics. In a practical point of view, then, we need not consider whether the disease is *essentially* benign or not: from what has been stated we learn that it must be removed early and com-

pletely, and that the constant application of caustics is to be condemned.

The second variety of the first species of epulis is the malignant; it is an example of epithelial cancer, or epithelioma, as it is otherwise termed. We have seen that the simple form just described may by irritation be made to run into the malignant, but frequently the latter acknowledges no such origin. The gum swells and becomes indurated at one spot, and for a certain time the tumour thus produced cannot be distinguished from the simple form. After some time, however, the true nature of the disease is unmistakably evinced. The surface of the tumour shoots out a number of small fungous papillæ, which give to it a somewhat rough, but soft and spongy feel; it assumes a purplish colour, and is readily made to bleed. As the disease advances, it loosens the teeth and involves the alveolar border, as in the former instance, but more rapidly and to a greater extent. As the tumour projects forwards, it adheres to the mucous membrane of the lip or cheek (according to its situation), and involves it in the disease, and as it extends backwards it runs along the palate, disorganizing it. After it has existed for a considerable time, the lymphatic glands under the lower jaw and at the side of the neck become enlarged, thus furnishing an unequivocal proof of the malignancy of the disease.

Epulis of this nature, like all other examples of epithelial cancer, is of slow growth, and does not appear to affect the health for a long time; even after the lymphatic glands have become contaminated, no great change may be observable for a considerable period.

In malignant epulis, early and complete extirpation is demanded far more imperatively than in the other variety of the disease. If the patient's life is to be permanently secured by operation, no delay nor tampering by means of escharotics is to be allowed; the diseased and all the adjacent parts must be clearly and effectually removed by the knife, the forceps, and even the actual cautery.

As this form of cancer is so slow in contaminating the system, it comes to be an important question as to whether operations might not be resorted to after the lymphatic vessels and glands have been involved. In answer to this Mr. Stanley makes the following observations, which, coming from such an authority, are to be received as highly valuable: "To the question whether an epithelial cancer of the mouth is a fit case for operation when it coexists with enlargement of the absorbent

glands under the jaw, I am disposed to reply, that its removal may with propriety be undertaken when only one or two absorbent glands are enlarged, and when these are so movable and superficially situated as to admit of being easily taken away. This statement is founded on the present condition of our knowledge respecting the disease, here distinguished by the term epithelial cancer, which is to the effect of its possessing so much of the character of a local disease that, if the whole of the contaminated parts are taken away, the patient will have a good prospect of remaining well."

The following case, which affords a good example of malignant epulis, shows that we may go farther than Mr. Stanley's recommendation, and that excision of the diseased mass may be performed with advantage even where enlarged glands do not admit of removal. The sequel of the case, however, exhibits the genuine malignity of this form of disease, though its progress be slow and insidious; and it clearly exposes the fallacy of separating epithelial cancer from the other forms of carcinoma, which has been done by some pathologists on the ground of difference of microscopic characters.

A. P., aged 25, was admitted into Steevens' Hospital with a malignant epulis on the forepart of the upper jaw, behind the lip. The tumour was about the size of a walnut, and it projected principally forwards, and pushed out the upper lip, to the mucous membrane of which it was adherent, thus forming a protuberance below the septum of the nose, which caused a good deal of disfigurement. It also extended a little backwards on the palate. The surface of the tumour presented an irregular fungous appearance, of a purplish colour, and yielded a soft spongy feel. All the incisor teeth were perfectly loose, being separated from each other by prolongations from the tumour which passed between and around them; and the entire depth of the alveolar border, supporting these teeth, was involved in the disease, so that the whole mass was quite soft and movable, conveying the idea that the bone was completely destroyed. There was one lymphatic gland beneath the lower jaw enlarged and very hard, and on the right side of the neck, below the angle of the jaw, was a larger glandular swelling, which was quite immovable. The patient stated, that she first perceived a small hard tumour on the gum several months before, but that it was only within the last two months that the disease began to increase rapidly and to involve the teeth, and still more recently that the glands had become affected.

Her appearance betokened tolerable health, and she expressed herself as free from any illness, apart from what was attributable to mental anxiety. The case was considered as unfit for operation; but, at the patient's urgent solicitation, it was undertaken and accomplished by Mr. Cusack.

The two canine teeth were extracted, and the whole of the alveolar process included between them was removed with a bone forceps, the central portion of the lip was also cut away, so that not a trace of the disease was allowed to remain. The patient left hospital in a short time, the cut having perfectly healed, and there being very little deformity observable.

I had an opportunity of closely watching this case as long as the patient lived, which was three years from the date of the operation. The disease never returned in its original situation. She died from a large malignant tumour in the abdomen, which, however, gave no evidence of its existence until a short time previous to her death. The particulars of the progress of the case after the operation are most interesting and instructive. For nearly two years she enjoyed excellent health, and the glandular swellings in the neck almost disappeared. At the end of this time, however, she began to experience a change in her health, and the glandular swellings gradually increased; they were apt to enlarge rapidly, and become painful on the accession of slight cold; but the use of some discutient lotion always reduced them to a certain extent, thus they continued without gaining much increase for some time. About five or six months before her death she was seized with jaundice, which proved extremely obstinate, and left her much debilitated. The glandular swellings now rapidly enlarged; that on the right side became as large as an orange, while another, which had recently sprung up on the opposite side, was but little smaller. The patient's health quickly declined. Frequent attacks of diarrhœa, accompanied by severe abdominal pain, set in, and she became miserably emaciated and feeble. About six weeks before her death a tumour, which previously was never satisfactorily felt, was now quite perceptible. This tumour quickly attained a large size, ascites and anasarca of the lower limbs then ensued, and the patient gradually sank.

I look on this case as highly instructive; for it demonstrates that though the disease of which it was so good an example is truly malignant, an operation for its removal may be undertaken with a view of prolonging life, notwithstanding that the glands are contaminated and do not admit of extirpation. There is little doubt that, had the disease been left to itself, the

patient must have died much sooner, having to endure a loathsome and far more horrible death. Had this case admitted of the enlarged glands being removed, as spoken of by Mr. Stanley, how much longer might she have lived?

Sometimes epithelial cancer attacks the gums in quite a different manner from what has been described. Instead of a regular epulis springing up, the gum swells and becomes indurated, and deep ulcerated clefts form, which spread widely, and extend upon the mucous membrane of the cheek, lip, and palate. Sometimes the gum is extensively converted into a granular wart-like structure, the bone becoming softened and atrophied, as is the case in epulis. This diseased condition is principally met with on the palate. The following case is a good illustration of the disease alluded to:—Richard Loftus, a healthy-looking man, aged 50, was admitted into Steevens' Hospital complaining of inability to chew properly from loosening of all the teeth on the left side of the upper jaw. On examination the teeth in the upper jaw, from the first incisor on the right side to the last molar on the left, were found to be quite loose, and the alveolar border corresponding with them was soft and movable. The entire of the roof of the mouth on the left side presented a peculiar red granular appearance, marked with furrows in different spots; and from the gum covering the posterior or inner surface of the alveolar border, long processes passed between the teeth, separating them from each other. The gum on the anterior or outer side did not exhibit much change from its natural condition. The patient stated that fully thirty years before he had a tooth extracted which had grown irregularly between the second and third molars on the left side. Ever since pressure always gave him pain in that situation; but beyond this he did not suffer any inconvenience, nor was he sensible of there being any altered state of his gums until recently. About six months ago he for the first time experienced a "scalding" sensation in the roof of his mouth, on the left side, whenever he made use of any warm food; this gradually increased, and became very disagreeable, though not amounting to pain, and then his teeth began rapidly to loosen.

This case was submitted at once to operation. The cheek was split from a little in front of the angle of the mouth to the malar bone; the mucous membrane of the cheek and lip being freely separated, the entire of the alveolar process, from the second incisor tooth on the right side to the last molar on the left, including the corresponding part of the hard palate, was cut

away with a bone forceps; afterwards the actual cautery was applied, so as to insure the extinction of every particle of the disease. On examining the morbid specimen after removal it was found that the osseous tissue had been almost completely absorbed; the mass appeared to be composed principally of a number of separate granular bodies, of a reddish colour, presenting an apt resemblance to half-boiled sago or the roe of a fish.

The second species of epulis has its origin, as already stated, in the periosteum and bone of the alveolus, being an outgrowth from these structures. It affords an excellent example of a fibrous tumour; and as it is apt to attain a very formidable size, it often demands an operation on an extensive scale. It is generally found attached to the alveolar process in the back of the mouth, and seems frequently to be produced by irritation from decayed stumps of teeth, or by some violence inflicted on the alveolus in their extraction. The disease is mostly benign, of very slow growth, and generally free from pain.

A small tumour arises on the gum, which, after attaining not a very large size, appears to become stationary, or to increase quite insensibly for many years, when, from some accidental injury, or by a mistake on the part of the surgeon who plunges a lancet into it, its growth is suddenly accelerated. Sometimes the tumour is pedunculated, in which case it springs from the outer surface of either plate of the alveolus; sometimes it is attached by a thick broad base, which is produced by the expansion of the laminae of the alveolar process from the growth arising out of or shooting into the socket of the teeth. Occasionally the tumour seems to be almost entirely formed by an expansion of the alveolar plates; and, more rarely, the morbid structure, instead of growing downwards, outwards, or inwards, passes upwards through some of the alveoli into the antrum, and thus leads to the impression that the disease originated in that cavity. When the tumour attains a large size, if it should take a direction outwards, it will protrude the cheek, forming an unsightly lump; and if it extend inwards towards the mouth it will interfere seriously with mastication and deglutition, also with articulation to a certain extent. The base of the tumour often occupies nearly the whole of the alveolar ridge on one side, as well as the floor of the antrum and part of the hard palate. The exterior of the tumour is smooth and regular, or lobulated, and presents the appearance of ordinary gum covered with the mucous membrane; and, on pressing it firmly between the fingers, it yields a resisting semi-elastic feel. The

interior of the tumour is composed of dense white fibres, which are most manifest in the centre on a section being made; the circumference is less firm, and presents rather a granular structure, which seems to be altered gum. Sometimes the tumour is perfectly fibro-cartilaginous, and no matter what may be its exact structure, there are always minute osseous particles thickly studded through it.

This sort of epulis evidently corresponds with what Mr. Liston has described as the "simple or fibrous tumour" of the jaws^a. He says, in describing the tumour: "The projection towards the mouth, often large, and passing down by the side of the opposed teeth and jaw, is hard and elastic, and conveys the feeling of brawn interspersed with bony particles; but it is covered with a continuation of the mucous lining of the cavity slightly thickened and altered." He also makes the following observation:—"In the records of surgery I can find very few such tumours described as affecting the superior maxilla." I shall now briefly relate a case in which an epulis of this species occurred in the upper jaw, and which was so large as to require for its removal the excision of a large part of the superior maxilla.

_____, aged 35, a woman of very respectable family, was admitted recently into a private ward in Steevens' Hospital, to undergo an operation for the removal of a large growth from the upper jaw. She could neither masticate nor swallow with ease; neither could she breathe freely through the mouth; her voice was guttural, and there were many words she was unable to pronounce intelligibly. She expressed herself as free from pain, and looked in very good health.

On making her open her mouth widely, a large epulis was exposed, which filled up the right side of the cavity. The tumour was somewhat of a flattened, pyriform shape; it lay on the back part of the tongue, and in contact with the roof of the mouth, and it extended so much across the cavity as to screen the uvula and nearly the entire of the velum from view; the finger, however, could be passed completely around it. Its surface presented a smooth uniform appearance, and looked precisely like ordinary gum, being covered with mucous membrane, except at one spot, where a slight excoriation was perceptible; on pressing it with the finger it yielded a peculiar firm resisting feel. The attached part of the tumour, its base, included the alveolar process on the right side, from the first bicuspid

^a See Medico-Chirurgical Transactions, vol. xx. p. 171.

tooth to its termination, where it lies adjacent to the pterygoïd process, and it seemed to be formed by expansion of the alveolar plates; it involved also a small extent of the palate. There was no evidence that the cavity of the antrum was implicated. A stump of a molar tooth could be felt imbedded in the tumour. No part of the growth extended outwards; the finger could be passed along the outer surface of what had been the alveolar process, but was now part of the tumour, without meeting with any elevation; the tumour had grown entirely into the mouth.

The patient could give but a very unsatisfactory sketch of the history of her case. She stated, however, that seven years ago she had one of the molar teeth on the right side of the upper jaw extracted, and that shortly afterwards she perceived a small tumour in the situation where the tooth had been removed, and which was unattended with any inconvenience. This increased by insensible gradations until it reached a size somewhat less than that of a walnut, at which it was, according to her own account, only a few months since; at that period the tumour became slightly painful and soft in one spot; this was mistaken for an abscess, and a lancet was plunged into it, and from this event she dated the rapid growth of the disease to its present dimensions.

It was evident, seeing the tumour was formed partly by the alveolar process, and had an attachment to a portion of the palate, that in order to remove it completely the floor and part of the anterior wall of the antrum should be taken away. Accordingly, a flap was raised from the cheek, as is done where complete excision of the superior maxilla has to be performed. A sharp-pointed bistoury was first pushed through the cheek at a point corresponding with the junction between the malar and superior maxillary bones, and was carried down to a little in front of the angle of the mouth. An incision was then made with a scalpel, commencing about half an inch below the inner canthus of the eye, and was carried down along the side of the nose and straight through the upper lip. The flap thus formed was dissected up so as to fairly expose the anterior wall of the antrum; next the blades of a strong bone forceps were applied upon the alveolar border, at the socket of the first bicuspid tooth, which had been previously extracted, and were made to cut through the bone in a direction upwards and very slightly inwards, so as to partly open into the antrum; a half-inch chisel was then laid upon the anterior wall of the antrum below the orbital ridge, and on a line with the termination of the cleft made in the bone with

the forceps, and with a blow of a wooden mallet it was driven into the cavity. The opening in the antrum was now enlarged with a cutting forceps, and the tumour having been seized with a strong three-pronged forceps the palate plate was cut through in a semicircular direction with a curved bone scissors, and the whole mass was removed as far back as the pterygoid process, the roof and a little of the anterior wall of the antrum being all that was left of that cavity.

Two or three dossils of lint armed with threads were inserted into the space left in the side of the face, and the incisions in the skin were approximated by means of the interrupted and the twisted sutures. The patient recovered with remarkable rapidity; she left the hospital in ten days after the operation, the incision in the skin having healed except at one spot at the side of the nose. I have seen her since two or three times; there is hardly any perceptible falling in of the cheek, and the cavity within the mouth is gradually contracting.



In making a section of the tumour after its removal, dense white fibres could be plainly discerned, running chiefly parallel with its long axis, and occupying principally the centre; some spots presented a regular cartilaginous structure. The circumference of the morbid specimen was softer than the centre; it was of a pale pinkish hue, and presented somewhat the appearance of the cut surface of a pear. The mucous membrane could be traced over the outside of the tumour from the remains of the alveoli, where it was quite loose. Throughout the entire substance of the tumour bony particles were thickly studded.

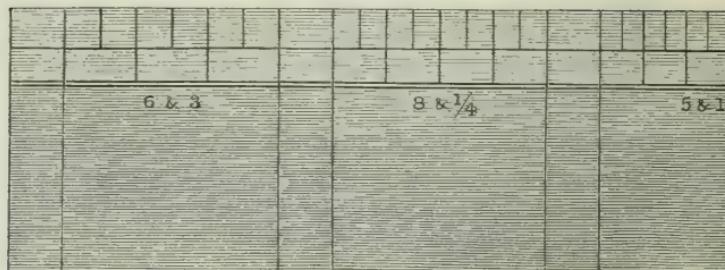
A portion of the specimen was submitted to the microscope, and it was found to consist "of very dense, white, fibrous tissue, with cartilage cells, and spiculæ of bone intermixed."

ART. VIII.—*A Short Notice of a Ready and Simple Mode of Measuring Microscopic Objects.* By THOMAS HAYDEN, F. R. C. S. I., Lecturer on Anatomy in the Original School of Medicine.

To those much accustomed to microscopic examination, especially to such as do not cultivate it as a distinct study, but rather use it as an adjuvant in the diagnosis of disease, the want must have been at some time apparent of a ready and simple mode of measuring such objects as are presented in the field of view. An instrument designed to supply this desideratum should be of the simplest construction, and readily applicable to the ordinary compound microscope, without the addition of "eye-piece micrometers," or other extrinsic agencies, and without deranging in any way the focalization of the object.

Having devised a simple contrivance which, at least to my mind, combines the above advantages, I thought it might not be unacceptable to those who, anxious to avail themselves of the valuable aid to diagnosis afforded by the microscope, are still unable to spare sufficient time from the active duties of hospital and private practice to profit by this to the full extent. To such, therefore, I address myself exclusively; and here I would disarm criticism by premising, that I do not claim originality in this plan: it is but a new application of a system of micrometry long known as that of Hooke, or "by superposition;" but whilst Hooke used it solely for the purpose of determining the magnifying power of the microscope, I would venture to extend its application to the further purpose of ascertaining the diameter of microscopic objects.

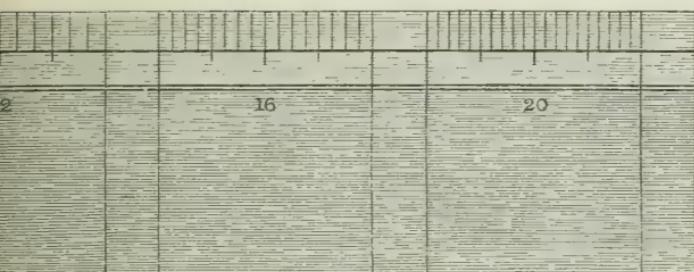
The magnifying power of the combination of eye-piece and object-glass about to be used having been previously ascertained by means of a stage micrometer, and a scale divided into small parts of an inch, as directed by Hooke, or, if a Ross' microscope be used, from the table supplied with it, the object to be measured should be brought into focus, its outline being made as distinct as possible, and viewed steadily with one eye, whilst, with the other or naked eye, a scale divided into minute parts of an inch, and held at the distance of distinct vision (10 inches), so that the lines will be directed at right angles with the object, should be kept fixedly in view. In a short time the object and the scale will be found to approach each other, and to be "superimposed" by the convergence of the axes of vision. The extent of the inch covered by the object will furnish the basis for determining, by a simple calculation, the size of the latter; thus, for example, suppose the magnifying power used be 300 diameters, and the object is found accurately to coincide with



1-10th of an inch, we have only to multiply 300 by 10 in order to get the size of the object, which would be, in the case supposed, 1-3000th part of an inch. This is easily understood: in order to determine the *real* size of an object we must divide its *apparent* size by the magnifying power of the combination of lenses used. Now suppose that, in the example taken, the object were found to cover the whole inch, its real size would obviously be 1-300th of an inch, but as it has been assumed to coincide with only 1-10th part, its real size is 1-300th part of 1-10th, or, 1-3000th part of an inch.

The above woodcut of a rule which I have had made will explain its object more fully. It has 6 inches marked off at intervals of 1-4th inch to prevent confusion; it will be seen that these furnish one-half, 1-3rd, 1-4th, 1-5th, 1-6th, 1-8th, 1-10th, 1-12th, 1-16th, 1-20th part of an inch. The number of parts might be multiplied at pleasure, but the above, taken with the various combinations of eye-pieces and object-glasses with which every microscope is provided, will afford measures to correspond with most objects,—if one should not suit, another can be tried, and so on. This will be best illustrated by the subjoined Table, showing the range of measurement supplied by my glasses with the rule above sketched:—

Object covering	With Magnifying Power of			
	250	325	500	650
$\frac{1}{2}$ inch.	$\frac{1}{500}$ th of an inch.	$\frac{1}{625}$ th of an inch.	$\frac{1}{1000}$ th of an inch.	$\frac{1}{1250}$ th of an inch.
$\frac{1}{3}$ "	$\frac{7}{500}$ th "	$\frac{9}{625}$ th "	$\frac{15}{1000}$ th "	$\frac{19}{1250}$ th "
$\frac{1}{4}$ "	$\frac{1}{1000}$ th "	$\frac{1}{1250}$ th "	$\frac{1}{2000}$ th "	$\frac{1}{2500}$ th "
$\frac{1}{5}$ "	$\frac{1}{1250}$ th "	$\frac{1}{15625}$ th "	$\frac{1}{2500}$ th "	$\frac{1}{3125}$ th "
$\frac{1}{6}$ "	$\frac{1}{1500}$ th "	$\frac{1}{1953}$ th "	$\frac{1}{3000}$ th "	$\frac{1}{3750}$ th "
$\frac{1}{8}$ "	$\frac{1}{2000}$ th "	$\frac{1}{2600}$ th "	$\frac{1}{4000}$ th "	$\frac{1}{5200}$ th "
$\frac{1}{10}$ "	$\frac{1}{2500}$ th "	$\frac{1}{3125}$ th "	$\frac{1}{5000}$ th "	$\frac{1}{6250}$ th "
$\frac{1}{12}$ "	$\frac{1}{3000}$ th "	$\frac{1}{3900}$ th "	$\frac{1}{6000}$ th "	$\frac{1}{7500}$ th "
$\frac{1}{16}$ "	$\frac{1}{4000}$ th "	$\frac{1}{5200}$ th "	$\frac{1}{8000}$ th "	$\frac{1}{10400}$ th "
$\frac{1}{20}$ "	$\frac{1}{5000}$ th "	$\frac{1}{6500}$ th "	$\frac{1}{10000}$ th "	$\frac{1}{13000}$ th "



As ten inches is about the average length of the compound body in most microscopes, the rule can be rested upon the stage whilst the object is being viewed, with a certainty of maintaining the distance of distinct vision^a.

Three objections will probably be taken to this plan: first, it will not, in all cases, give the exact measurement of an object in odd numbers or parts of a measure; but no instrument as yet constructed does so except the "Cobweb Micrometer" of Ramsden, which, owing to its complexity of structure and consequent high price, can never be generally available; secondly, owing to the unsteadiness of vision when the axes are made to converge, it will be difficult to fix the object for a sufficient time to enable the observer to take its exact measure; and thirdly, we are measuring microscopic objects "by the inch." To the two last objections it may be answered, that they equally apply to Hooke's method of ascertaining the magnifying power of the microscope; but if, notwithstanding, this method is pronounced by Quekett to be such that "nothing better has been devised in modern times," I think there is an *a fortiori* case made out for its application to the measurement of microscopic objects. It should be remembered, too, that magnified objects are no longer "microscopic" in one sense of the word.

The chief recommendations of this instrument are its simple construction, ready application, and trifling cost. In conclusion I will affirm, after some experience of this method, and having tried it with various objects of ascertained dimensions, that it can be safely trusted as approximately accurate, which is as much as may be said of those at present in general use.

^a The ruled margin is to be held next the microscope.

ART. IX.—*On a Peculiar Morbid Growth from the Os Uteri^a.*

By S. L. HARDY, M. D., L. R. C. P. I., Examiner on Midwifery and Diseases of Women and Children in the Royal College of Surgeons, and Fellow of the College; Physician to the Institution for Diseases of Children, &c.

It is remarkable how frequently the recurrence of hemorrhage indicates the commencement of uterine disease, and is so often the first circumstance which attracts the attention of the patient, and makes her seek for medical advice. The following case is an instance of this kind, and serves to impress on the mind of the practitioner the necessity and importance of instituting a careful examination of the uterus in all diseases of that organ, particularly when attended with this symptom.

Mrs. G., aged 39, the mother of two children, was not pregnant since an abortion, which took place fourteen years ago, in consequence of an accident; her health was good until seven years after this occurrence; she then suffered from slight uterine hemorrhage, which recurred every week or fortnight, and continued for several days on each return; three years from its commencement it became nearly constant, but not to any great extent, and was occasionally accompanied by expulsive pains. Her size increased so much that she supposed herself pregnant.

It is now (November, 1854), two years since I first saw her: she complained then of severe pain over the lower part of the abdomen, which was large, tense, and exquisitely tender to the touch; the vagina was occupied by a tumour the size of a child's head at the ninth month of utero-gestation, which felt as if containing fluid, and so completely filled the pelvis, that it was impossible to ascertain by examination from what part it had its attachment; there was no discharge of any kind. To all appearance the woman seemed so very low that her death was hourly expected. After suffering a great deal she at length improved, and the tumour in a few months after, when I again saw her, was completely removed. No trace of it whatever was to be felt, and the os uteri could be reached without difficulty. Six months ago (May), she consulted Dr. Churchill, who informed me that a tumour resembling a polypus was felt in the vagina; this, and a similar one, were removed by ligature.

On the 21st of October I was called to her on account of violent expulsive pains, which I found to be caused by the

^a Read before the Obstetrical Society of Dublin.

presence of a tumour which partly protruded through the os externum. Neither its attachment nor the os uteri could be reached by examination. Externally the uterus felt irregular on its surface, and about as large as at the fifth month of pregnancy.

The expulsive efforts having been quieted by opiates, next day I applied a ligature, and on the third day removed the tumour (which was about the size of a large pear) by a scissors. In a week after a similar growth, but very much larger, appeared, which I took off in the same manner.

On the 12th of November I was informed that she had suffered severe pain in her left arm, which had become of a dark colour. I saw her on the 13th; the fingers were then very much reduced in size from shrinking of the flesh and integuments; the hand and forearm, to near the elbow, were in a state of dry gangrene; this extended, and on the 16th the blackness and gangrene had reached to the upper part of the arm, close to the axilla. The parts over the vessels felt hard, and were very painful; no attempt at a line of separation took place; the gangrene did not extend to the shoulder, but the dark colour gradually declined from the diseased arm to the surface of the integuments on the thorax.

There was very little increase in the size of the vaginal tumour since the last application of the ligature; and a good deal of thick, drab-coloured discharge, exceedingly fetid, flowed constantly from the vagina.

The tumour in the abdomen had diminished very much; it lay towards the left iliac region, and felt about as large as the closed hand.

From this date (November 16) the strength rapidly gave way under great suffering, and death took place on the 24th instant.

On examination the abdomen felt flat and hard, its cavity contained no fluid, and the peritoneum was healthy. The tumour, which was felt in the left iliac region during life, was found to be the uterus, which occupied the same situation after death; and the vaginal tumour was about the same size as when last examined.

The following are the appearances which presented themselves on removal from the body.

The body of the uterus was larger than natural, and of a pale drab-colour, with a small tumour, about the size of a pea, growing on its anterior surface, a little to the left of the mesial line, covered by peritoneum.

The interior contained a quantity of brownish matter; the

mucous membrane was of a brownish colour, and had near the fundus, on the posterior wall, a portion of projecting body, soft, and with raised edges, about the size of a sixpence.

The right ovary had a cavity about what would hold a pea, which opened anteriorly, evidently caused by an abscess, but not at this time containing matter.

The tumour which filled the vagina had its attachment to, and seemed to be a growth from the anterior lip of the os uteri, measuring 12 inches in circumference, and 5 inches long, of a dark red colour; excepting at its lowest extremity, where it was brownish, marking the situation where the ligature had been applied.

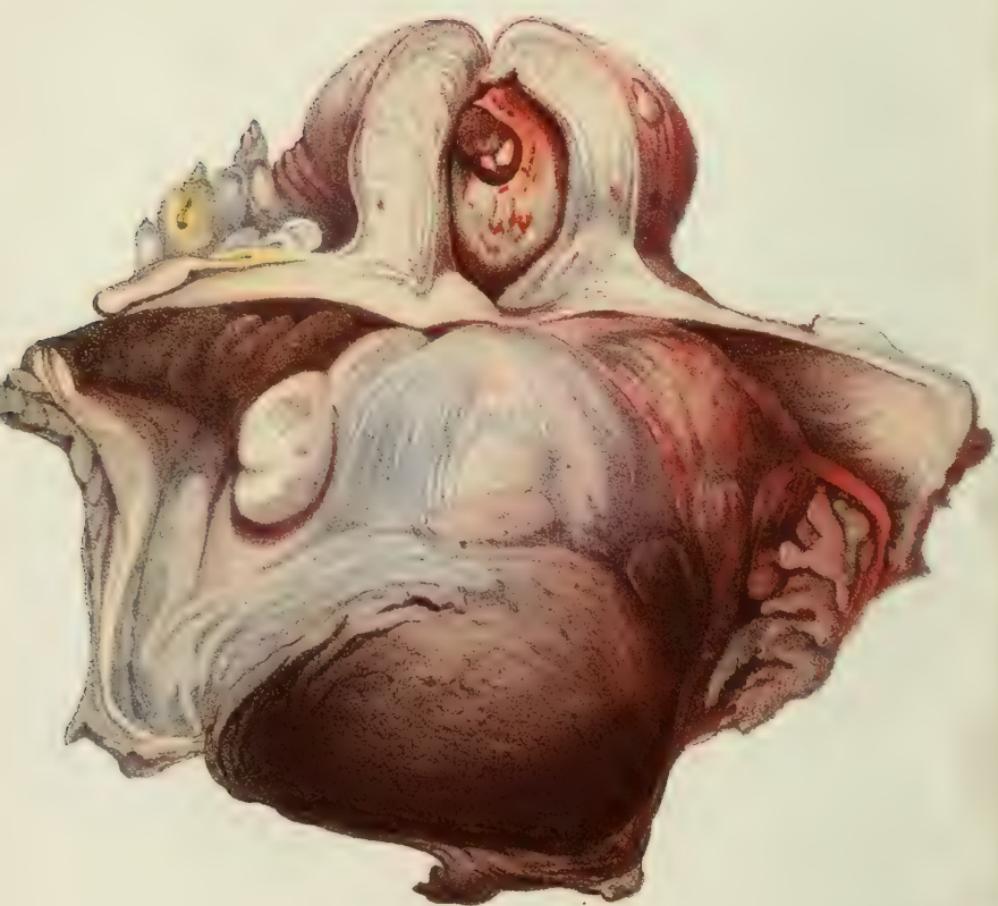
Posteriorly it had an adhesion to the wall of the vagina 5 inches in circumference. From the upper edge of this adhesion to the os uteri the measurement was 2 inches.

The tumour on its posterior surface, where it was not adhering to the vagina, was separated from above downwards by deep fissures.

On its anterior surface, to the right of the mesial line, there was a projecting portion, about the size of an ovary.

There are several circumstances which are deserving of attention in this case. In the first instance it cannot be wondered at, considering the age of the patient, that she should have supposed herself pregnant, and very likely to be threatened with an abortion, as her size was increased, and she had hemorrhage and expulsive pain, symptoms which had been present on a former occasion, when, as is stated, seven years ago, in consequence of an accident, she miscarried.

On the first occasion of my seeing her she seemed to be rapidly sinking from peritonitis. She was exceedingly weak and prostrate, with a rapid, feeble pulse. The tumour, which is described as filling the pelvis at this time, differed a good deal in its character from that which is represented in the accompanying drawing: it felt exactly like a thick bag of membrane, containing liquor amnii, rendered tense by pressure, and had no fissure in any part that could be perceived by the finger. The time that elapsed from my seeing her on this occasion until I again had an opportunity of ascertaining her state might have been between two and three months. It was during this interval that the tumour had disappeared. Neither from the patient herself, nor from her friends, could I discover that anything particular to attract their attention had occurred while this was taking place. In about sixteen months after, she consulted Dr. Churchill; after which two portions of the tumour were removed by ligature. In about three months from this



date she was seized with the violent expulsive pains mentioned in her case, and again sent for me. The size and the situation of the tumour at that time, as described above, enables an idea to be formed of the rapidity of its growth.

It has been remarked that enlargements or growths from the os uteri sometimes pass into the uterine cavity and remain there for a time. If such could have taken place in the present instance, its descent would account for the great diminution of the uterine tumour as felt in the abdomen on the 21st of October, compared with what it was on the 16th day of November; but it will presently be seen that there are reasons for believing the tumour could not here have done so. From the end of October, when the large piece was removed, until the 24th of November, nearly a month, the date of the patient's death, the tumour in the vagina seemed to have remained stationary, which might be accounted for by supposing that it had descended to its fullest extent, or that the abundant discharge that came from the vagina at this period had retarded its growth. Cutting off the tumour, below the ligature, was very necessary, owing to the great fetor caused by so large a mass of dead animal matter. It was accomplished without the least difficulty, and gave the patient no uneasiness whatever. This practice has been found of much advantage, for a like reason, in the treatment of uterine polypi: by it the risk of irritative fever is greatly prevented, and the danger of hemorrhage may be avoided by allowing sufficient time for the circulation to be arrested by the ligature before resorting to it.

As well as could be ascertained by external examination of the arm that was gangrenous, it seemed as though the circulation had been impeded from pressure over the bronchial artery at its upper portion, near the axilla, where the surrounding parts felt hard, and very resisting. It was with considerable difficulty that an autopsy was obtained from the friends of the patient, so that, unfortunately, it was impossible to ascertain with precision its real state. The appearances found in the inspection of the uterus were most important, and made a valuable addition to the history of the case, particularly as they are faithfully represented by the accompanying coloured lithograph. Before opening the abdomen for its removal, I endeavoured, by a vaginal examination, to ascertain the attachment of the tumour, which information could not be arrived at during life; but this I found to be impossible, owing partly to its great size, which filled the vagina, and partly on account of the very contracted state of the os externum, which prevented the introduction of the hand.

On considering its adhesion to the vagina, the remark alluded to, of growths from the lip of the os turning into the uterine cavity, does not seem applicable, as this circumstance would go far to prove that the tumour must have been held so firmly in the vagina it could not have passed into the uterus. If, during life, the real nature of its attachment to the lip of the uterus had been known, a ligature might have been applied between this part and the vaginal adhesion; but when all the circumstances of the case are considered, it is difficult to form an opinion as to the amount of benefit which might have accrued to the patient by the operation.

Dr. Montgomery was good enough to show me a preparation in his Museum which somewhat resembles the one now described. It consists in a large tumour which is attached to the anterior lip of the os uteri, of about six inches in length, nine in circumference, and two where it adheres to the lip of the uterus. Its surface is smooth throughout, without either fissures or growths of any kind; it is not attached to the vagina, and is of an oval form: thus differing in several important particulars from the present one, so far as regards the application of a ligature for its removal, had such been practicable during life. The preparation was presented to Dr. Montgomery by a medical gentleman.

On laying open the tumour which is the subject of this communication, it presented the appearance of spread out muscular fibre growing from the uterine tissue,—imparting to the touch the same flaccid feel that it did during life. At its lowest part, where it had been cut through by the ligature, the change of colour described as present on its outer surface was also apparent. I regret that at the time circumstances prevented me from making a microscopical examination of the growth.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

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UNDER other circumstances and at other times, we might, perhaps, hesitate ere devoting a considerable number of our pages to the investigation of a subject, of which we should not be surprised to learn the majority of our readers were already weary. The consideration of cholera is now, however, clothed with double interest, whether we regard the fatality which has attended its recent visitation here, or look abroad to distant scenes where countless victims attest its power. Book after book has been written, while journals, periodicals, pamphlets, and newspapers, have rivalled each other in setting forward, with wonderful perspicuity, the symptoms, progress, and treatment of this disease. Theory has succeeded theory, until human ingenuity, having exhausted the faculty of invention, could only find variety in retracing her steps to commence again anew. Treatment, chemical, mechanical, empirical, and specific, have each been hastily adopted, warmly advocated, and as hastily laid aside, as experience attested not only their insufficiency, but even their inutility. From a perfect chaos of conflicting statements, perplexing dogmas, and pernicious conclusions, truth has in vain struggled to be free. The inquiry arises, why is this? The answer we conceive to rest in the imperfect and one-sided view of disease which many have been led to not only adopt, but to also advocate with the greatest energy. To take a just view of medicine requires a great and comprehensive mind, capable of abstruse inquiry and profound thought.

The object of its study being life as evidenced through death,—the operation of that invisible spirit which permeates the masterpiece of Divine Wisdom,—does man expect that he shall wholly solve the mystery of that organism? If so, let him away with the infirmities which mock his efforts for their relief.

At all times have we cherished a veneration for the healing art, but on no occasion have we been more deeply impressed with its sublimity and responsibility, than when, having perused the several works before us, we paused to ponder on their contents. Manifesting the closest observation and very careful thought, their authors have, in their various suggestions, separate plans of treatment, and different theories, too plainly demonstrated, that as yet it is not permitted us to lift that veil which envelopes vitality; however we may, by the closer scrutiny of its manifestations, more truly appreciate the unseen principles which seem to guide its operation. It is remarkable that, while in their positive observation of this disease a singular consistency and uniformity pervade the generality of writers, yet in their estimate of its causes the widest range of difference is observable. We are satisfied that much of this diversity of opinion is the result of a miscalled "Rational Pathology" which seeks to explain all vital changes by cadaveric appearance, forgetful that these are, but too frequently, merely the effects of causes wholly beyond the reach of the knife. It is very far from our intention to undervalue pathology, or to speak lightly of that school which seems disposed to rest medicine on animal chemistry and microscopy. The elementary constitution and molecular construction of tissues in a state of health or of disease, as indicating more fully the mechanism for vital action, or its evidences, have enabled the physician to accomplish much in preventing, as well as more successfully combating morbid action. All, however, who have most closely studied both sciences in their relation to life will be the first to admit, that, however they may explain changes which have been perfected, however they may recognise the several steps essential for the accomplishment of these changes, they fail in throwing other light on certain internal operations which must have been terminated ere these changes became manifest. Frequently, throughout the pages of this Journal, have we exclaimed against the adoption of principles which would regard the human frame as a machine amenable to ordinary mechanical laws, and capable of being equally guided or governed by principles, which in the abstract sciences are known to prove adequate to the production of certain results. We have also raised our voice against the adoption of a purely vital pathology, which should

exclude all estimation of the reactions and further morbid conditions, which physical changes through their secondary operations are known to occasion. In other words, eclectic medicine has been our theme; which, carefully scrutinizing all particulars derivable from every source, is satisfied that the nearest approach to truth in theory is not that which admits of the most rational explanation, but that which most faithfully accords to our actual observation. Such being the doctrine of our medical faith, we do not hesitate to confess, that general principles, founded on experience, have guided us in the treatment of many diseases, and more especially of that which we are now about to consider. We have long wished for some great and comprehensive work on this disease as evidenced throughout our own country, in which observation and inquiry, on an extensive scale, might be directed by philosophical medical minds. Feeling, however, that the time, labour, and ability, requisite for such an undertaking, might, as regards individual interests, be more profitably employed in elucidating diseases of greater frequency, and more general occurrence, we almost despaired of meeting with so able, elaborate, impartial, and thoroughly scientific a Report as that which Drs. Baly and Gull have drawn up at the desire of the Cholera Committee of the Royal College of Physicians of London. In offering to our readers a necessarily imperfect analysis of the labours of these distinguished physicians, and, as we proceed, in bringing under their notice the chief points of interest the other works we have included present, we are satisfied they will reciprocate the sentiments we have so early ventured to express.

The varieties of opinion as to the remote origin of Asiatic Cholera, and the cause of its spreading, are so numerous that it would be quite impossible to enter into their full consideration, nor should the doing so accomplish any useful scientific purpose, since for this, as for other affections, individuals are found to have propounded and adopted the most contradictory theories. In the Reports of the College of Physicians, Dr. Baly, with that wisdom which his deservedly high reputation insured, has ranged all theories under six principal heads, which may be briefly stated as follows:—1st. That which refers the spreading of the disease to “an atmospheric influence or epidemic constitution,” its progress consisting of a succession of local outbreaks, the particular localities affected being determined by certain “localizing conditions,” which are, first, all those well-known circumstances which render places insalubrious, and, second, a susceptibility of the disease in the in-

habitants of such places, produced by the habitual respiration of an impure atmosphere. 2nd. That which follows the analogy of diseases known to be due to morbid poisons, and regards the cause of cholera as a morbific matter which undergoes increase only within the human body, and is propagated by means of emanations from the bodies of the sick, in other words, by contagion. 3rd. That which—propounded by Dr. Snow—gives a more specific form to the doctrine of contagion, and supposes that the poison of cholera is swallowed, and acting directly on the mucous membrane of the intestines, is, at the same time, reproduced in the intestinal canal, to pass out, much increased, with the discharges; and that these discharges afterwards, in various ways, but chiefly by becoming mixed with the drinking-water in rivers or wells, reach the alimentary canals of other persons, and produce the like disease in them. 4th. That which assumes that the cause of cholera is a morbific matter or poison, but supposes that it is produced only in the air, not within the bodies of those whom it affects, and that its diffusion is due to the agency of the atmosphere. 5th. That which, a modification of the last, admits that the cholera matter is increased by a species of fermentation, or other mode of reproduction, in impure, damp, and stagnant air, but maintains that it nevertheless is distributed and diffused by means of human intercourse, being carried in ships and other vehicles, and even in the clothes of men, especially the foul clothes of vagrants, and the accumulated baggage of armies. 6th. That which, combining the second and fourth, assumes that the material causes of the disease may be increased and propagated in and by impure air, as well as in and by the human body.

Before determining which of these theories is most in accordance with facts, it is requisite that certain general characters, observed in cholera epidemics, be carefully considered; for unless the hypothesis be borne out by matter of fact, and confirmed by sensible experience, it cannot be true, as being at variance with the realities of nature. We shall, therefore, follow Dr. Baly in his course. The first and most obvious of the general characters of a cholera epidemic is *its unequal and very partial distribution*. In this respect it presents a remarkable contrast to epidemic influenza. Dr. Graves has fully established that while the latter disease in its visitations has pervaded, within a very short period, the whole of Europe, and at one and the same time has more or less involved every part of this island, affecting four-fifths of its inhabitants, cholera has left whole districts unvisited, and has fallen severely on comparatively few localities. This remark respecting the eccentric and

irregular course of cholera, as regards the country at large, equally applies to its more limited visitations; for, if attention be fixed on single towns, isolated streets, or public institutions, the same character is observed. One part of a town suffers most severely, another escapes altogether. In a few houses in a street half the inhabitants are carried off by the disease; in the remainder not a single death occurs. In a large public establishment, such as a barrack, a lunatic asylum, or a prison, it often happens that the disease is, at least for a time, confined to one wing of the building, one ward, or one series of rooms. These are facts which, to use the words of Dr. Graves, are "of considerable weight in arguing whether cholera, like influenza, is propagated by atmospheric influences." The second general character of a cholera epidemic is, that *the localities, especially and most severely, visited by it, have certain features by which they are distinguished from those other places which entirely escape or suffer only in a slight degree.* In this proposition the several authors before us fully agree. It was observed that the parts of England in which the rate of mortality was highest in 1849, as well as in 1832, were, with a few exceptions, the more-densely populated regions lying around great rivers, on the sea-coast, or in the neighbourhood of mines, especially coal-mines. In this respect a close analogy may be traced between cholera and yellow fever, which latter disease Dr. Cummins, in his highly valuable papers on the subject, has observed to prevail to the greatest degree either at the coal depots on the West India station, or in those ships moored next to them. The preference of cholera for such localities is shown by the fact of its having been three times as fatal in the registration districts on the coast than it was in the interior of the country.

The conditions most generally present, wherever a considerable mortality occurred, may be stated as being represented by a low, damp site, and a crowded population with defective ventilation. The experience of Irish physicians is in perfect unison with this fact, which at once suggests the inference, that the morbid cause, whatever its nature be, finds the conditions for its increase or for its action, at least in part, in the impure atmosphere of such places. Dr. Baly, applying to these facts that theory of epidemic cholera which attributes it to a "general state of the atmosphere," or "atmospheric influence," brought into action by "localizing causes," observes:—"Such a cause would be expected to produce its effects wherever the localizing conditions exist." Yet the Report declares, though it has been shown that the epidemic proved most violent and fatal in localities of a certain nature, it is also undoubted that very many places,

some towns, many smaller places, and parts of towns, presenting the same condition, have suffered but slightly, or wholly escaped. From facts of this nature it is justly inferred:—If the cause of cholera be one generally present through the atmosphere, there must be some other condition essential for its action besides the known conditions of its insalubrity; and this unknown condition must, in some instances, have been absent throughout entire towns; in others, only in limited spots. The partial distribution of the epidemic, and its absence from some of the places presenting the conditions favourable to its development, argue strongly in favour of the theory of a “cholera matter,” not equally diffused through the atmosphere, but only partially distributed and transported in some way or other to the places affected. These facts are likewise considered as leading to the further inference, that if the cause of cholera be a material poison, it has most probably not a gaseous form, since a gas soon becomes diffused through the air and dissipated, while the cause of cholera remains many days producing its effects in one limited spot; while, lastly, the close relation in which the intensity of the epidemic seems to stand to density of population, and activity of traffic, though not inconsistent with any one theory, especially suggests the probability of the disease being in *some way propagated by human intercourse.* All honour to the memory of Robert James Graves, whose master-mind, many years since, with an elaborateness of research and an accuracy of inference pre-eminently his own, traced the progress of this disease throughout the world, and thereby demonstrated that where the epidemic spread from one country to another, *it never traversed the ocean at a rate exceeding that of ships.* While further observing that, in its travels up the highest mountain passes, as in India; or across the ocean, as to the Isle of Bourbon; or when accompanying the caravan across the Desert, as when it arrived at Mecca and Medina; or when ascending rivers, and making the towns on its banks the successive stages of its journey; “*in all such cases cholera seemed regulated by no common physical circumstances except human traffic and human intercourse.*”

The third character of an epidemic of cholera is, *its long duration in a country, or even in a town of large size.* This character of cholera may be regarded as distinguishing it from other epidemics, more especially from that of influenza, the duration of which in one town does not generally extend beyond a few weeks, and in a whole country seldom exceeds two or three months. The theory which attributes cholera to a general state of the atmosphere, or atmospheric influence, might be

fairly presumed to argue a certain relation between the direction of the wind and the degree of prevalence or intensity of the epidemic. Observation has proved that no such fixed relation exists. To this subject we shall presently have occasion to again refer, when noticing the able and deeply interesting Report of Sir William Burnett. Many arguments, based on the continuance of the epidemic in one locality, and on the fact that changes in the wind do not sensibly affect the progress of cholera, tend to ignore the proposition that this disease is *primarily* due to a general state of the atmosphere, or to an influence moving with the atmosphere. The theory which assumes the dependence of cholera on a morbid matter, transportable within limits from place to place by the atmosphere, and capable of increase, under favourable conditions, in the places to which it is conveyed, is regarded as affording a more simple explanation of the long continuance of cholera in the countries or towns which it visits.

A fourth and important character of cholera is, *the intensity of an epidemic of the disease varies during its continuance in a country or a large city, so that it has periods of little and of great activity, and usually well-marked periods of increase, acme, and decrease.* Before proceeding to estimate the import of this character of the disease, with regard to the principal theories of its cause, it is requisite to inquire into the external circumstances or conditions which attend and apparently determine the increase and the decrease of its prevalence in any place where it exists. The first inquiry which here arises has reference to the period of the year in which cholera has been observed to prevail with the greatest intensity; and secondly, how far meteorological influences conduce to its greater prevalence at those periods. Amongst the thirty-two epidemics, of which particulars are in the Report before us set forth, six produced the greatest mortality in the month of July, seven in August, and seven in September, twenty in all, in one or other of these three months. And amongst thirteen epidemics in the chief cities of the several countries (New Orleans and New York being taken as the capitals of the Northern and Southern States of America respectively), eleven were most fatal in one or other of the same months, namely, three in July, three in August, and five in September. That the season has no exclusive influence in determining the time of culmination of the epidemic is shown by the fact, that of the thirty-two instances, three epidemics were most fatal in June, three in October, one in April, two in March, two in January, and one in December; while in the same city the greatest mortality from the disease has, in different epidemics, occurred in different months. Paris, for example, in

1832, suffered most severely in the month of April, and in 1849 in the month of June. That temperature has a large share in regulating the severity of the epidemic is probable, from the more frequent prevalence of cholera in an intense degree in the latter months of summer and the beginning of autumn, as also from the fact that it is much more fatal in hot than in cold climates. Yet, as other facts tend apparently to an opposite conclusion, it is of importance that those matters be investigated, which may assist us in determining the connexion really subsisting between the epidemic and temperature. It is a matter of general observation, that when epidemics of cholera have begun during the hot season, they have quickly risen to their climax, and have then soon declined and become extinct on the advance of the cold season; whereas, in the instances in which they have commenced at the close of the year, they have, as a rule, not caused any considerable mortality before the following spring or summer. There is, notwithstanding the arguments in favour of high temperature as developing or increasing the virulence of the epidemic, abundant proof that the increase of cholera is not necessarily connected with any particular degree of external heat, nor its decline with the diminution of that temperature. This is, by Dr. Baly, set forward through several tables and diagrams illustrative of the relation between the mortality from cholera and average temperature as observed in London, Paris, and Berlin. These Tables oppose a new set of facts to those already quoted; for, while previously admitting that temperature, as a rule, does in some way or other exert an influence over the degree of prevalence of cholera, we are now satisfied that this influence is not the only one capable of producing the like results, and is neither necessary nor constant in its operation. The marked preference of cholera for those localities in which the conditions of insalubrity abound, may tend to explain the nature of the influence exercised by temperature, and the probable reason why, in many cases, it is superseded. These conditions are believed to act principally by the production of an impure atmosphere. The same influence, acting on various conditions, must produce corresponding variations in those conditions. It is, therefore, obvious, that the higher the external temperature, the greater will be the amount of impurities resulting from the decomposition of organic matters in the atmosphere, which renders it highly probable that the usual influence of a higher temperature, in increasing the intensity of a cholera epidemic, consists in adding to that impure condition of the atmosphere, which so much favours the local development, and probably

also the diffusion of the disease. Other meteorological conditions are found to aid a high temperature in producing an impure state of the atmosphere. Great stillness of the air causes a localization of its impurities; a certain degree of moisture promotes decomposition, and tends to the same result. When an increased temperature is superadded to these, the most favourable combination of circumstances, which predispose to cholera, may be presumed to be present; since the probability is, that a high temperature favours the growth of a cholera epidemic by tending to increase the impure condition of the atmosphere. In opposition to this presumption certain exceptional cases arise, which lead to a doubt that the same conditions which determine the degree of severity of the disease in particular spots, also regulate the variations in its intensity as an epidemic at different periods in the same place. Some of those villages in which the winter outbreak of cholera, during 1848-9, proved most severe, were not by any means distinguished for their local attractive causes; while in other instances, where the local conditions which are believed to generally favour the increase of cholera, were abundant, the epidemic, which had been severe during the cold season, declined with that change of temperature which might be presumed to favour its continuance. These facts, while maintaining the necessity of the closest attention to all sanitary measures, at the same time lead to the belief that some unknown cause exists, which exerts an important influence over the degree of prevalence of cholera. So far the inferences which these observations warrant though affording no grounds for positive assertion, yet indicate such precautionary measures as could not fail to be of great general advantage, and which might also be reasonably expected to exercise much particular influence on the progress and character of this disease.

The variations which have been observed in the intensity of cholera epidemics, and the circumstances which determined these variations, are considered by many as not favourable to the theory, that cholera is propagated and diffused by means of human intercourse. These facts are regarded as tending to establish a close resemblance between Asiatic cholera and the common summer cholera and diarrhoea of this country, and remittent fever, which there are such good grounds for believing to be purely of malarious origin, and not to be in any way communicable. The question of the contagion or non-contagion of cholera, is one so nicely balanced, that hosts of startling facts might be adduced in support of either side. Allowing it to be contagious, we are bound to admit that it differs from the ordinary contagious

diseases of this country, in being far more under the influence of temperature, and other conditions of the atmosphere, and that its diffusion through a town takes place with much greater rapidity than that of any known mechanical agency. If we altogether ignore the influence of contagion, we are quite unable to respond to the arguments advanced by Graves, or to explain the cases detailed by Dr. Seaton Reid, of Belfast, who, in the able pamphlet with which we have been favoured, adduces such evidence as affords just reasons for believing that cholera is in some way propagated by human intercourse. "Two questions," Dr. Reid writes, "naturally suggest themselves in relation to contagion in this disease:—1st. Is it necessary that every patient who suffers from an attack of cholera should have been within the sphere of contagion?" To this Dr. Reid replies, "that it is not." 2nd. "But, if a case has occurred, will those who are near the patient, either by living in the same house, or being called to attend him, be more likely than others not so circumstanced, to take the disease?" Dr. Reid's ample experience compels him to reply, "that they most certainly would." The fact of conflicting opinions existing on matters of observation, testifies that the data for judgment have been either imperfectly, or erroneously estimated. Yet, on this matter, we incline to the supposition that neither are wholly wrong, since no *simple* theory will account for all the facts in the history of epidemics of cholera.

The view of the cause of cholera which seems most consistent with the variations of intensity of a cholera epidemic, and with what is known of the circumstances determining those variations, and which at the same time accords with the other characteristics of cholera previously considered, is the "miasm" theory,—that, namely, of a material substance distributed through the air, and undergoing increase in the air, or on surfaces exposed to the air. This theory would be perfectly consistent with the observed phenomena which are favourable to the extension of the disease, as the "miasm" might be supposed to find its pabulum in the increased impurities of the air, while the exceptional phenomena, which occur in the course of cholera epidemics, might be assigned to the action of an unknown cause, capable of destroying either the morbific miasm itself, or the impurities of the air. This theory, however, according to observation, far from, to our minds, ignoring the doctrine of contagion, is a strong argument in its favour, as its negative propositions rest on the recognition of a presumed, though unknown, collateral agency.

The fifth character of cholera is, that *after a certain time it*

altogether disappears. Though the cessation of cholera usually occurs in the cold season, cold, while exerting a suppressing influence, is as certainly inadequate to, of itself, eradicate the disease; for the epidemic has often survived a severe winter in colder climates than that of England. It is, therefore, but just to infer, that some other cause must at least concur with the influence of cold in bringing about such a result. The many who advocate the dependency of cholera on contagion, or, in some way or other, on human intercourse, regard this peculiarity of the disease as being quite consistent with their theory, explaining its cessation by the assumption, that all persons are not susceptible of the disease, which, therefore, ceases in any locality when those inhabitants, who are so, have been exposed to the contagious influence, and affected by it. In corroboration of those views, which regard cholera as essentially contagious, Dr. Snow, and others, have adduced the fact, that, in the epidemic of 1832, a direct relation subsisted between the number of the population, and the duration of the disease in different towns and villages. Dr. Snow thus writes:—

“ If the cholera cases were not connected one with another, there would be no reason why the few cases which happen in a village should not be scattered over as long a period as the thousands which occur in a great metropolis.”

Here, as in many other points of dispute respecting this disease, facts tell both ways. We have admitted that certain localities manifest an aptitude for this disease. Such localities are not simultaneously affected; as those localities are more numerous in large towns, it is clear that in whatever way the successive attacks of the different localities were produced, a longer time would elapse before the disease could run its course through the more populous and more extensive place. Arguments against the contagion of cholera are presumed to rest in the fact, that the disease ceases in public institutions and other such places, while numbers susceptible of its influence continue unaffected; while the supposition that cholera, if contagious, ceases throughout a country or city from the absence of any more persons susceptible of its influence, is at variance with our experience of other contagions, which, notwithstanding their subsidence, are never wholly extinct. While these facts argue that cholera may be communicated from one person to another, observation leads to the inference, that it is at least improbable that the cessation of the epidemic throughout the country, or even in a town or village, is due to the failure of subjects for the contagious influence. On this point we quote

from the able Report of Dr. Balfour, who, having dwelt on its influence on different races of men, and the greater susceptibility of Europeans to its attacks, adds:—

“ It is possible, indeed probable, that several points which have hitherto been deemed inexplicable, connected with the manner that cholera develops itself, may be cleared up by the knowledge of this single fact; particularly the many instances which have occurred of regiments, when marching through districts perfectly free from cholera, being attacked with the disease in a virulent epidemic form, and losing a great number of their soldiers; the possibility being that the agent, although present in the district, has no power over the less susceptible native inhabitants, but exerts its full influence on the stranger races of whom the regiment is composed; and the fact of two native regiments marching at the same time, along the same route, and through the same villages, and crossing each other on their journey, the one regiment suffering severely from cholera, while in the other regiment not a single case occurs, may likewise be referrible to the same law.”

This observation of Dr. Balfour, while clearly tending to support the view of an individual liability to the influence of this disease, may be responded to by another truth equally remarkable, that cholera, having fatally prevailed in a localized community, for a time disappears, and again returns to break out with greater violence amongst those previously unaffected. As an argument against the contagion of cholera, or against individual liability, occurrences of this nature must be received as but negative proofs, for the same peculiarity of action is not unfrequently manifested by other diseases of an admittedly infectious or contagious nature. The mere circumstance of one or many persons escaping the attack of a disease, known to be contagious, proves no more than this,—at the period of such exposure their physical aptitude was not favourable to the reception of the morbid agent, and affords no further grounds for the affirmation, that, under other circumstances, very different results would not have ensued. If any exemplification of this be wanting, we refer to the fearful mortality which occurred amongst Irish medical men during the famine years, when mental and physical depression combined to render them so many victims to the discharge of their public duties.

The entire disappearance of cholera, regarded alone, is most readily explainable by the theory, that the epidemic is produced and maintained by a peculiar state of the atmosphere, or atmospheric influence, which at length passes away, and, of course, leaves the country free from the disease. According to this view, fresh outbreaks would involve the necessity of

supposing fresh visitations of atmospheric influence. If, on the other hand, the view be adopted that cholera depends on a material poison conveyed by the atmosphere, but only partially distributed through it, this poisonous matter increasing wherever there are the conditions of damp and foul air, the cessation of the epidemic must, it would seem, be ascribed to some other cause, which either frees the entire atmosphere from matters essential to the existence and increase of the cholera poison, or destroys the poison itself. Ozone, which has been shown by Professor Schönbein to exist in the atmosphere in varying quantities, has the power of destroying the impurities resulting from the decomposition of organic matter, and has so far the requisite attributes of this unknown agent. Beyond this fact we can argue nothing; for were we to admit that the electricity of the atmosphere bears any fixed relation to cholera, we should ignore recorded observation; and were we to infer that variations in the atmospheric proportions of ozone eventuate in either the production or continuance of cholera, it would follow that all diseases which are fostered by an impure air ought to be equally under its influence, which experience proves is not the case.

The sixth character of this disease Dr. Baly enters on, is *the manner of its dissemination as regards time; that is to say, the degree in which its appearances, its period of greatest intensity, and its cessation were severally simultaneous in different places.* It is scarcely requisite we institute an analysis of those elaborate tables from which Dr. Baly draws his conclusion in reference to these points. It is sufficient for our purpose to observe that they fully corroborate the several statements we have already set forth; the general results to which they lead being, that in the spring and summer of 1849, different towns began to be affected in succession and not simultaneously; and that the order in which they felt the effects of the epidemic was, as a general rule, connected with certain characters of site, density of population, and trade. Towns lying on, or near the sea coast, or on navigable rivers, and consequently on a low level, having at the same time a dense and poor population, with a large accumulation of ill-constructed and ill-ventilated dwellings, surrounded by all kinds of impurities, being those which were usually the first affected, the same localities, as might have been inferred, also presented the greatest mortality. Exceptional cases are, however, not wanting, which prove that the obvious local conditions which are generally present in tracts of country and towns, rarely attacked by the epidemic, either do not in all cases and at all times include the essential ele-

ment which determines the manifestation of the disease in a given place, or are liable to have their influence counteracted by some other agency. Though when cholera is established, localities, having the obvious features of insalubrity most decidedly marked, seldom escape its visitation, it may occur that the spots it first visits are not those which present the characters of unwholesomeness in the most marked degree. This is further confirmatory, that obvious conditions of insalubrity do not necessarily include all that is essential for determining the spots in which an epidemic of cholera shall produce its first effects. The investigation of the relation that existed between the outbreaks of cholera, in different places, in regard to the *periods of their greatest intensity*, while affording some ground for the belief that, even in the winter, the intensity of the epidemic was, in a measure, regulated by a general influence, at the same time shows that the general tendency of the epidemic to reach its climax in August or September, and perhaps the influences producing that tendency, were, in the instances of many towns and registration districts, counteracted or interfered with by special care.

A careful investigation of the progress of the epidemic in each district, leads to the opinion that the general result of an augmented mortality at a particular time was due, rather to cholera affecting a larger number of individual spots, than by its producing an increased mortality in all the localities previously visited, as also that it appears to have exerted its fatal influence in the several seats of its chief action, in succession, not simultaneously.

As a general rule it may be stated, the towns, in which the disease tarried latest, had all the obvious characters of site, density of population, and sanitary condition, which distinguished the towns earliest and most severely visited; and in a large number of instances, the places that suffered longest were those which had been earliest attacked.

There are, however, many exceptions to this rule, or, at all events, many facts relating to the time of cessation of the epidemic in different places, which cannot be thus entirely explained; but on the whole, these cases are less remarkable than those of the long persistence of the disease; while both series of instances present decided exceptions to the rule that the early cessation or late persistence of the epidemic, in different places, was determined by the degrees in which they severally presented the known local conditions of unhealthiness. It is true that in certain exceptional cases, the mere local conditions, regarded as sources of foul air, do not account for the

sudden occurrence of some of the outbreaks after the epidemic had subsided elsewhere, and for the continued absence of the disease from others of them, after the first early outbreak had ceased, although the epidemic was increasing in other places. Such facts, while having their particular value, do not materially affect the position, that impure air is an essential local condition for the severe manifestation of cholera; in other words, the principal condition, by virtue of which individual localities, and the persons inhabiting them, are susceptible of the influence of the epidemic.

We could not adduce a stronger argument in favour of the doctrine of contagion, and the influence which foul air, and association with those affected by cholera, are capable of exercising, than that which Sir William Burnett furnishes in his Report, containing, as it does, heart-rending accounts of the fearful havoc cholera has occasioned amongst the fleet. Having remarked that diarrhoea and dysentery are of frequent occurrence amongst the inhabitants of the low damp valleys of the Bulgarian and Wallachian provinces during the summer months, but that they do not assume the choleraic form, which appears to depend on a cause not endemic, Sir William observes:—

“ But whatever the cause, or causes, may have been which gave rise to the disease first in the allied camps, and secondly in the fleets at Baljick and Varna, there is this remarkable fact to be noticed, that it did not occur, at all events, in an epidemic form, *until vessels had arrived from an infected port, with men on board actually ill of the disease at the time of their arrival.*”

In a Report received from Mr. Deas, the Deputy-Inspector of the fleet, he mentions, on the authority of Dr. Hall, Inspector-General of Hospitals attached to the army, that a French officer, who had just arrived from Africa, died of cholera at Gallipoli on the 3rd of June; and that another case proved fatal to a soldier of the 19th Regiment, on the 17th of June, at the British encampment at Alladeen, some twelve miles distant from Varna; but that no other case appeared in either army for some time. These cases, from their isolation and the circumstances under which they occurred, were regarded as cases of the sporadic form of the disease. It was not until about the beginning of July, when the 5th French Regiment of the line arrived at Gallipoli in a steamer from Marseilles, where it is believed cholera existed at the time of her departure, that the disease can be said to have thoroughly declared itself. Mr. Deas mentions that—

“ It broke out on board the vessel during the passage, and four or five men died of it. Soon after the arrival of this regiment at

Gallipoli some divisions of the French army marched for Varna and carried the disease with them; these divisions, it was stated, though not on good authority, lost twenty men on their march.

“ But it is quite certain that cholera made its appearance at or near Varna soon after their arrival; at first it was confined almost exclusively to the divisions which had come from Gallipoli, but it afterwards spread extensively through the camp.”

On the 21st of July a decided case occurred in the British hospital at Varna: the disease then spread rapidly to the men outside the walls in camp, though “ *the majority of the first eighteen attacked were at the time patients under treatment in the hospital for other diseases.*” On the 22nd the disease is reported as breaking out with great severity in the camp at Devina, which is about sixteen miles distant from Varna, but not more than four from Alladeen. The Report further adds:—“ Free communication had been kept up all the while between the different British and French camps.” Why, then, it may be asked, are we at liberty to infer that the French communicated the disease to each other, and with this free communication failed to at once do so generally? It is questions of this nature which afford grounds for different opinions.

During the months of May and June the British fleet appears to have enjoyed excellent health; but towards the latter end of June, and early in July, diarrhoeal complaints became more numerous than usual when the vessels approached the land, but more particularly when they anchored off either of the ports of Varna or Baljick. It is believed that those attacks were rather of an endemic than of a choleraic character. According to the medical returns the “ Diamond” was the first vessel in which the epidemic made its appearance. She had anchored on the 7th of July at Baljick, in shore of the line-of-battle ships. Her crew were in perfect health; but on the 9th, 12th, and 13th, cases of diarrhœa, accompanied by a prostration of the vital powers, occurred amongst them; and on the 14th of July a French steamer, the “ Primoguet,” arrived from Toulon, and, as several of her crew were affected with cholera, she was sent in shore of the English squadron to be cleared out, and to undergo a sort of quarantine. The weather at the time was tempestuous, and *the wind blew towards the “Diamond” from the position of this steamer and her tents.* On the night of the 16th one of the “ Diamond’s” crew was attacked with collapse, rice-water purging, vomiting, cramps, and the other unequivocal symptoms of cholera; but it was not followed by any other case of a similar nature until the 20th, when diarrhœal attacks began to be prevalent, though they again

speedily disappeared when the ship anchored further off the shore. This ship, we are informed, remained at her new anchorage until the 11th of August, and had, in the mean time, the greatest attention paid to her sanitary condition; she then went to sea with several vessels in which the disease had broken out in a most virulent form, yet, though she remained close by the latter, there did not occur another case deserving the name of cholera amongst her crew until the end of September, when there were two slight cases, which appear to have been contracted somewhere off the Crimea.

This, and the following statement, are, perhaps, the best, as they are the most recent confirmations of many of the circumstances and peculiarities of cholera mentioned throughout our review. We pass over the eruption of the disease at Varna, as no matters of pathological interest appear to have been associated with it.

We read that on the 9th of August, the disease in its malignant form broke out simultaneously in the "Britannia," "Albion," "Furious," "Trafalgar," and "Tribune." The first of these we shall particularly notice. It appears from the report of Mr. Rees, Surgeon to the "Britannia," that when, on the 30th of July, this ship encountered the epidemic, she was, as regards crew and general arrangements, in a most favourable condition to do so. The first days of August were oppressively hot, and a dead calm generally prevailed throughout the bay. Diarrhoea sprang up among the crew, and on the 9th, one case merged into cholera. On the morning of the 12th the ship drew out of the bay, in her passage getting the advantage of the prevailing north-east breeze. The patients did well on that day and on the following. On the night of the 13th the breeze freshening, the lower deck ports had to be closed, but the ventilation by means of wind-sails was maintained to the fullest extent practicable by such imperfect means. On that night, and towards the following morning, a fresh case of cholera with collapse occurred; but the applicants with diarrhoea were not more numerous than they had been during the previous night. As the day advanced, however, there was a marked change for the worse in all the diarrhoea cases; one of these patients, as he walked into the sick-bay at the morning visit, fell into a state of collapse, whilst three other men presented themselves who appear to have approached the very verge of cholera.

"About 10, a.m.," Mr. Rees states, "the great outbreak commenced, but as a minute description of the scene which followed would be foreign to my purpose, a few bare facts and figures must be left to tell the tale of an invasion which, for the suddenness of

its advent, the tempest violence with which it raged, and the wreck it left behind, has surpassed, perhaps, everything of the kind in the annals of the service.

"I have mentioned," continues Mr. Rees, "the marked alteration in the cases of diarrhoea observed on the morning of the 14th; this unfavourable change might be attributed to the closed ports and consequent defective ventilation, but being at sea, one entire watch was of course kept constantly on deck; it is therefore difficult to account for the outbreak which took place on this fatal day; although some of the seamen and officers have since spoken of a peculiar dense cloud which passed over this ship and the 'Albion,' on the 13th.

"The first to be attacked were the men already on the list for diarrhoea, several of whom fell into a state of collapse one after the other; but about the same time, robust, healthy men, who had fallen suddenly down in a state of collapse, began to be brought in from various parts of the ship, even from the yards, where they were seized while reefing sails.

"The duties of the medical officers became now almost overwhelming; men, struck down in the manner described, were brought in so frequently and in such numbers, that the senior assistant and myself had to devote our entire energies to such pressing cases only, whilst the other assistant had to stand at the table in the sick-bay, dispensing medicines to a stream of men complaining of diarrhoea, both real and imaginary, for a panic had now seized the crew. This scene continued for many hours; and it was not until the following morning, when at length the panic became less, that the names of the patients living and dead, could be inserted in the sick-list.

"From the 14th to the 17th, both days included, there occurred 201 cases of cholera, and 93 deaths. The experiment of putting to sea having in our case failed, the propriety of returning to anchorage was determined upon; but we had, in the meantime, been driven to leeward by a strong north-east wind, and there was, consequently, an inevitable delay in getting back to Baljick.

"The necessity of return to port became daily more evident, by the continued violence of the scourge, and the now crowded state of the middle deck, where the discharges from the bowels and stomachs of the sick, and the want of adequate ventilation, had contributed to render the ship at length, in my opinion, the laboratory of pest-poison.

"On the 17th we gained the roadstead of Baljick, and finding the place full of empty transports, all the sick and the healthy, with the exception of officers, sentries, and two boats' crews, were transferred to them, the bad cases being selected for the 'Apollo.' Only twenty-two cases of cholera occurred afterwards, *and nearly all the victims were men who had been in close attendance on their sick mess-mates, and had accompanied them to the transports.* There is one gratifying circumstance, however,—the disease was not communicated to the crews of the latter."

We have deemed it advisable to give this extract in full. It affords much field for reflection. The total number of cases of diarrhoea which occurred during this terrible visitation, amounted to 396; the total number of cases of cholera to 229, of which 139 terminated in death. The total number of men borne on the ships' books, when the disease broke out, amounted to about 1040, so that the loss was about 13 per cent. of the whole crew.

We shall not follow the details of the mortality in those other ships, wherein so many brave and gallant fellows perished, but conclude our notice of this report, by extracting the following observation of Sir W. Burnett.

"In the vessels which lost many men, the mode of treatment adopted appears to have been as judicious as it was in those that lost but few; the rate of mortality being influenced, apparently, much more by the violence or concentration of the exciting poison than by any other cause. It is satisfactory to observe that no remedies of an heroic, of a dangerous, or of a purely empirical nature were employed, with the exception of such of the latter as had been sanctioned by previous use. The results on the whole, as regards the medical treatment, were not satisfactory, but they were not more disastrous than generally happens from similar visitations."

The exact nature of the part which may be played by the atmosphere is not always very obvious; many instances may, however, be referred to in which it seems to be apparent that the atmosphere, if it at all participated in the production of the results, most probably served as the means of communicating or transmitting the cause of the disease from one locality to another. Facts leading to this inference rest on the investigation of the successive mode of attack of individual localities, houses, groups of houses, and public establishments, within the same district, which seems to argue that the impure atmosphere of a district determines the occurrence of numerous outbreaks within its area, by rapidly communicating the disease from one locality to another. There are good grounds for believing that, in certain states of the atmosphere, a body of damp and impure air may travel over the surface of the country for many miles, still preserving its original properties. It is quite possible, therefore, that such air, if capable of at all transmitting the disease or its cause from place to place, may convey it from one town to another some miles distant. The recognition of such a fact in our general estimate of this disease, by no means militates against the adoption of opinions with regard to its communicability by other, and less universal means, whatever the nature of this atmospheric poison

be. It is important to know that all the facts relating to the extension of cholera render it probable, that the unknown condition of the air, which represses its progress, is most frequently associated with comparative dryness and purity of the atmosphere, and the unknown condition which promotes it with the presence of moisture and impurities. The lingering of the disease in certain spots, for the most part distinguished by the local conditions productive of a damp and impure air, while elsewhere throughout the country it had disappeared, is in accordance with the theory of a poison which finds the means for its maintenance and increase in such places and in such an atmosphere. The renewed rise of the epidemic in the summer might be reasonably referred to the increase of impurity and moisture in the air under the influence of rising temperature, and perhaps other meteorological conditions, to the consequent increase of the poison in the localities where it already existed, to its distribution with the air from these different foci to other places more or less distant, to its increase in these again, if they afforded the necessary conditions, and to its further diffusion from them to other places, through the medium of the atmosphere. The order in which the different parts of the country and different towns were attacked, and ceased to suffer during the year 1849, further favours such a theory. Again, the climax of the epidemic being nearly simultaneous in the different localities visited by it, at the season and in the area, most remarkable for impurities of the atmosphere—a fact which the tables of the London registration district as set forward in this report assert—though suggesting the inference, that impure air was the medium through which the disease or its cause was communicated from one spot to another, yet is, for obvious reasons, much more intelligible on the assumption that the morbific matter was diffused by currents of air.

The theory that the cause of cholera is a general state of the atmosphere, an “atmospheric influence,” or “epidemic constitution” of the air, is untenable, if this general state is referred to the moving mass of the atmosphere. Since, while the air is constantly in motion, and changed by the currents setting in from different quarters in succession, the epidemic continues for a long time persistent. We may observe that the term “epidemic constitution,” as here quoted, is far different in its signification from that which its adoption by Sydenham implied; as now used, it refers to the atmospheric aptitude or tendency to one particular disease, its original signification or intention being to express a certain otherwise inexplicable

universality of type, which at times is observed to appertain to all diseases.

A modification of the theory of "an atmospheric influence" supposes a power operating in the atmosphere, though not moving with it, and producing its effect on the human body in localities where the atmosphere is foul, or in persons rendered susceptible by long dwelling in an impure air. This theory includes the vaguely propounded notions of a particular "electrical state," and a "telluric influence."

The theory that cholera is diffused by means of human intercourse affords a ready explanation of many of the more remarkable circumstances relating to the epidemic, which point rather to a morbific poison, partially distributed, than to an agent or influence existing throughout the atmosphere, as, for instance, the early appearance of cholera in sea-ports, and in countries and towns where traffic is active, its appearance in the same country not simultaneously, but successively, the late attack of some places, which, for site and sanitary condition, seemed obnoxious to an early invasion, the successive mode of attack of different localities in small towns, and the appearance of the disease in small places around great foci of the epidemic. Diffusion by human intercourse seems to be by no means the most appropriate explanation of other facts of great importance in reference to this disease.

In relation to these adverse facts, a distinction must be made between the two principal modes in which human intercourse may be the means of propagating cholera. The idea usually associated with the diffusion of a disease by human agency is, that the disease is the effect of a virus which is reproduced in the bodies of the sick, and which, emanating from their bodies, infects other persons; and consequently, that a person receiving the contagion in one place, and travelling to another, may convey the infection thither in his own body. The close connexion between cholera and local conditions, the great influence exerted over the epidemic by atmospheric changes, its want of analogy with other contagious disorders, the rapidity of its spread through large cities, with various facts relating to its commencement, climax, and cessation, in different places, appear to furnish strong reasons for regarding the theory of direct personal contagion with something more than doubt. There is, however, a second mode in which human intercourse might be the means of communicating and diffusing cholera; a poison, undergoing its increase out of the body, might be carried from place to place in the vehicles of men, in their baggage,

or even in their clothes. This view is believed to be consistent with the history of the dissemination of the epidemic, not only in all those particulars which we have mentioned as favourable to the idea of its diffusion by human intercourse, but also in respect to the power exercised by the sanitary condition of different localities, and especially by the state of air in them on the extension, as well as on the local severity of the epidemic; since, according to this theory, the poisonous matter, though carried to many places by human intercourse, would only produce and increase the disease in spots where the air is foul. Observations are not wanting which militate against this theory as an exclusive one. That human intercourse has a large share in the diffusion of this disease is no argument against the proposition that other agencies are capable of exercising even a greater influence. The manner of the commencement, progress, and cessation of cholera in each particular spot visited by it, has been inferred from its progress and duration in the several lunatic asylums in England, during the epidemic of 1848-49, from which it appears that the commencement of the disease, usually, in one limited part of a public establishment, or in one of a group of houses, and its extension to others in succession, is not easily reconcilable with the theory of a general and persistent atmospheric state or influence; a much more probable explanation of the commencement of the epidemic in one part of an asylum or other public establishment, and of its subsequent extension through other parts being afforded by either of the theories which supposes the cause of the disease to be a material poison, transferable from spot to spot, and from person to person, by human intercourse or by currents of air.

The theory of the production of cholera by a general atmospheric influence fails to explain the localization of the disease where circumstances are apparently equal, except on the supposition that a local condition adequate to excite the general atmospheric cause to action exists.

The doctrine of pure contagion, while explaining some facts, would fail to solve others of equal importance. If the cause of cholera be regarded as a poison, not reproduced within the bodies of the sick, but capable of independent increase and existence, its propagation is easily accounted for, while its cessation might be safely ascribed to a process of self-exhaustion, or to its destruction or removal, either by an altered state of atmosphere, or by the ventilating, cleansing, or other sanitary processes adopted. Under such circumstances the extinction of the epidemic would be the conjoint result of the limited dura-

tion of the disease in each spot visited by it, and of the supervention of a condition of the atmosphere no longer favouring its communication to new spots.

In noticing the manner and progress of cholera across a continent, or across a sea, from one country to another, the general laws which appear to regulate its diffusion are in complete accordance with some of the main features presented by the epidemic in this country, which, as has been observed, furnish strong grounds for the belief that the state of the atmosphere has a paramount influence over the extension, as well as the degree of local intensity of the disease, and obviously favour the theory of a material poison conveyed from place to place, increased or reproduced in those places in which it finds the necessary or favourable conditions, and thence transmitted to other places; its transmission, as well as its increase, being promoted by damp and impure air, and by warmth, and being impeded by a dry and pure air, and by cold. Many notorious facts relative to the transit of cholera from one continent to another, and to and from an island, concur in affording strong presumptive evidence of its connexion, in some way or other, with intercourse by shipping. The transit of cholera up rivers, along the course of roads, in direct opposition to the prevailing winds, or, to use the words of the Report, "in the teeth of the monsoon,"—the fact that its rate of travel is usually progressive with that of men,—constitutes strong presumptive evidence of the diffusion of the disease by human intercourse. While, again, many cases might be cited in which localities become affected, where no such cause could be traced or probably existed.

Many of the grounds on which the strictly contagious nature of cholera is usually maintained, merely tend to show that the disease is communicable by human intercourse. The special and direct evidence in favour of the contagious nature of cholera consists of three classes of facts. The first is, that in a vast majority of the instances in which the introduction of the disease into a town or smaller community has been traced to human intercourse, the seeming vehicle of the infection has been a person or persons actually infected with the disease. The second, that persons who have washed or handled the clothes, linen, or bedding, of cholera patients, have frequently themselves become affected. The third class of facts is constituted by the attacks of the disease experienced by nurses and other attendants of the sick. The Report before us furnishes several conflicting arguments in reference to the contagious nature of cholera derivable from observation on these three points, which,

though generally conclusive of the fact that the disease is communicable by human intercourse, at the same time only show that the human body forms one nidus for the reproduction of the poison ; that contagion bears but a part in the propagation of the epidemic ; that comparatively few persons are susceptible of its influence ; and that by proper sanitary precautions it may be almost entirely disarmed of its power. There is, as has been already mentioned, reasonable ground to infer that the cholera poison is, under certain circumstances, wafted from place to place by the wind. Its appearance in ships, anchored at a distance from an infected shore, and in the course of the land-winds, its general appearance throughout a town, the mode of its extension through it, as well as the origin of the disease in many public institutions, is inexplicable on other suppositions. It does not, however, follow, that the cholera poison should retain its properties when carried by winds over distances of very many miles, it being, as a general rule, more probable that it would in a long transit be dissipated and destroyed by the purer air with which it would be brought into relation.

The last theory which the Report before us enters on the discussion of is, that propounded by Dr. Snow, which gives a new form to the doctrine of contagion, and makes the solid and liquid *ingesta*, instead of the air, the vehicles by which the contagion is imparted to the human system. Dr. Snow's theory supposes that the poison being swallowed acts directly on the mucous membrane of the intestines, and excites the flux from its surface ; that the poisonous matter is at the same time reproduced in the intestinal canal, and passes out much increased with the discharges ; and lastly, that it then, in various ways, but chiefly by those discharges becoming mixed with the drinking water in rivers or wells, reaches the alimentary canals of other persons, in whom the like disease and accompanying reproduction of the poison ensue. The arguments advanced by Dr. Snow are those based on the contagion of the disease ; its pathological features, which establish the drain from the mucous membrane as the source of at least the majority of the characteristic morbid phenomena ; the probability that in the dark and dirty dwellings of the poor, portions of the discharge are conveyed into the stomach with the food ; the appearance of cholera in those who have recently eaten food brought from infected houses, or have handled the soiled bedding of cholera patients ; the extension of the disease among the inhabitants of groups of houses which were supplied from water in which the matter of cesspools, &c., was commingled ; and lastly, the greater prevalence of the

disease in towns where the water used by the inhabitants was rendered foul by the contents of sewers. We shall not follow Dr. Baly in his able exposition of the value of these arguments. It is sufficient to state, that the pathological characters of the disease are explicable on other grounds; that while the communications received by the Cholera Committee do not confirm the belief that the disease is imparted, by means of the clothes and bedding of the sick, to persons handling or washing them, other facts, though apparently corroborating such an opinion, fall far short of being themselves proofs of the poisonous nature of the discharges, and render it probable that the association of a contaminated state of the water, in certain instances of outbreaks of cholera, was a mere coincidence. Many facts prove that the disease can spread through towns without the aid of contaminated water; as also that, in most instances, the epidemic has ascended rivers, instead of following the course of the water downwards; while, added to these, the relative mortality of the sexes, and other proofs derivable from the history of the disease, are together ample grounds for establishing the insufficiency of the theory proposed by Dr. Snow.

From, then, the various facts and arguments set forward in this Report, and the evidence of the other authors we have quoted, the conclusions arrived at by Dr. Baly must be regarded as deserving of our fullest approval. It has been shown, the theory that assumes the sole cause of the disease is a general state of the atmosphere, a general "atmospheric influence," or "epidemic constitution," is untenable; that the persistence of the epidemic for a certain time, even in localities of a small extent, and its very partial distribution in a country, a town, and even parts of a town, are two facts which at once suggest the inference, that the cause of the disease is a material substance, and that it is only partially distributed; that a large body of evidence renders it certain that human intercourse has, at least, a share in the propagation of the disease, and that it, under some circumstances, is the most important, if not the sole means of effecting its diffusion; while the atmospheric currents appear to share with human intercourse the office of disseminating cholera by the diffusion of the disease over limited areas; its transmission from some spots to others near at hand, rather than its conveyance to distant places which is probably effected, in the majority of cases, by the locomotion of men; that the propagation of the disease by human intercourse does not prove its contagious nature. The question, whether the poison enters the body through the lungs or through the alimentary canal, has not been conclusively solved; but no sufficient reasons

have been found for adopting the theory, that the poison is swallowed with the food or drink, is reproduced in the alimentary canal, and, being discharged with the secretions of the stomach and intestinal canal, propagates the disease, by finding access in the same vehicles to the stomachs of other persons. And lastly, that theory alone is supported by a large amount of evidence, which regards the cause of cholera as a matter increasing by some process, whether chemical or organic, in impure or damp air, and assumes that, although of course diffused with the air, it is also distributed and propagated by means of human intercourse.

Having thus closely followed Dr. Baly in the principal points which he has discussed, it remains for us to briefly notice the preventive measures he proposes. These may be classed as general sanitary rules of the most stringent character, with the inculcation of habits of strict personal cleanliness, and individual caution in dietary matters: rules which the Irish Board of Health failed not to energetically impress, and to the adoption and inculcation of which, by the various Sanitary Committees throughout our city, we have no hesitation in affirming much of our comparative freedom from the recent epidemic is mainly due. We now leave to our readers the estimate of Dr. Baly's labours, from which we have thus freely drawn, and pass to the investigation of the morbid anatomy and pathology of this disease.

The first peculiarity in reference to the post-mortem appearance of patients who have died from cholera in its cold stage—that of collapse—which Dr. Gull directed attention to is, the rise of temperature that, in many cases, has been observable on the surface of their bodies after the occurrence of death; while, where an absolute increase of temperature was not noticed, the length of time during which the body retained its warmth seemed to be, in numerous instances, remarkable, even when it might be presumed as being by no means unfavourably situated for losing its warmth quickly, by reason of the temperature at the time being moderately low, the wind coming from the east, and the window of the room, in which the body lay lightly covered, remaining open during the day-time. The muscular contractions presented by the body after death from cholera, which all who have experience of this disease must be familiar with, are next noticed. The muscles so affected being those principally of the extremities, while occasionally contractions are observed in all the other voluntary muscles, which vary in extent, from flickering and tremulous undulations in a

few fibres, scarcely to be seen or felt, to contractions sufficiently powerful to move the limbs from their position, or even to displace the body itself. They have been most commonly observed in those who died rapidly of the disease, in the middle period of life, when the muscular system was vigorous and well developed, which may, perhaps, account for their greater frequency in males than in females. When not occurring spontaneously these contractions could still be excited by percussion, or mechanical stimulus of the fibres. Dr. Gull directs attention to the fact that such are not peculiar to cholera; in confirmation of which he quotes Mr. Barlow, who observed similar phenomena in a case of severe apoplexy, fatal after six hours; Dr. Dowler, who readily produced contractions by percussion after death from yellow fever and some other diseases; and the observations of Reinhardt and Leubuscher, who had often seen contractions of individual muscles in patients dying of various diseases. Whether, or how far, these contractions depend on derangement of the force of the spinal cord, consequent on a morbid quality of the blood, as suggested by Mr. Grainger in explanation of muscular twitchings observed during the several epidemics, is a question not without pathological importance and interest. Cadaveric rigidity, it is stated, has often supervened very quickly; in one case it began at the end of an hour after death. Briquet and Mignot have observed it after forty minutes, and in most cases before two hours had elapsed. Its occurrence was not retarded by the high temperature which the body retained,—in one case being very marked, whilst the temperature in the axilla was as high as $100\cdot58^{\circ}$. Rigidity occurred not only at an early period, but lasted from twenty to forty hours. Cruveilhier observes, that putrefactive changes are slow in patients dying from this disease, as in all cases where much blood has been lost, and adds, “in the alimentary canal, on the contrary, decomposition was rapid, as commonly occurs where the digestive organs are the seat of considerable sanguineous congestion.” Dr. Gull, while confirming the former part of this statement, observes, that with respect to the intestinal canal the conditions were variable, and often the contrary of that noted by this great authority. The intestines containing little more than pure water, and being entirely devoid of foecal and ammoniacal contents, were certainly not prone, in most cases, to undergo rapid decomposition.

The morbid appearances in cholera when death occurred during collapse are next, by Dr. Gull, set forward with much minuteness, and the authority of eminent pathologists freely quoted. We shall in our analysis of this part of our subject include the

valuable paper of Drs. Reinhardt and Leubuscher on its morbid anatomy, a translation of which is embodied in Dr. Barwell's excellent practical observations on this disease, as also the pathological observations of Mr. O'B. Mahony. From these we learn, that, in the majority of cases, the stomach was pale and generally more or less distended. It contained turbid, mucoid fluid, grey or colourless, or tinged of a chocolate or reddish brown hue, by admixture with blood. The surface of the mucous membrane was covered with tenacious mucus, having, in some cases, a puriform character from the large admixture of exfoliated epithelium. In twelve out of thirty cases it was pale; in others there was hyperemia in different degrees, usually most marked at the greater cul-de-sac and along the greater curvature, either in a continuous arborescent form, from fulness of the smaller veins, or in irregular patches of punctate redness, occupying the summits of the ridge, and often accompanied by spots of ecchymosis. The membrane was generally rather thickened and opaque, the texture firm, and the surface mammillated. Dr. Mahony, in reference to this mammillated appearance, observes:—

“ This particular state of the mucous membrane was first described by M. Louis, who considers it as a result of chronic inflammation, in which opinion M. Andral and others concur. It has, however, been found in cases, where during the lifetime of the patient no symptom of inflammation was exhibited; and the fact that this condition of the membrane is found in the autopsy of those who die in the collapsed stage of cholera, shows that it may come on very quickly, and tends to disprove that this ‘mammillated’ state of the mucous membrane entirely depends on chronic inflammation.”

In one instance, in which death occurred thirty-six hours after the onset of the acute symptoms, slight traces of granular exudation (diphtherite) were observed extending along the greater curvature towards the pylorus. In four cases the solitary glands are stated to have been enlarged; in two they were seen near the cardia and termination of the oesophagus; and in two near the pylorus. At this part also the membrane was occasionally dotted over with small pits, which Dr. Gull states were probably produced by the bursting of these glands from serous effusion into their cavities, a result which has frequently been observed in the solitary glands of the small intestines. These observations are partially or wholly confirmed by other authorities quoted. Dr. Gull, though having insufficient data to form an opinion respecting the condition of the pharynx and oesophagus, at the same time mentions that in one

case, fatal after twelve hours of acute symptoms, it was observed that the lower part of the oesophagus was deprived of its epithelium. The state of these parts is described by Reinhardt and Leubuscher, in Dr. Barwell's work, as on three occasions presenting traces of diphtherous deposit. Other observers have noted the same in a less degree.

In many of the reports furnished to Dr. Gull, no note is made of the peritoneal surface; in some it is stated to have been rather dryer than natural, and covered with a slight layer of a tenacious mucoid secretion. Briquet and Mignot, in their report, state that,

"The peritoneum was carefully examined in thirty-two cases. In eleven there was universal and intense injection of the small capillary veins of the sub-epithelium cellular tissue; in the other cases the same condition existed, but in a less degree. It was in general most marked on the depending surface of the intestines, and on the organs contained in the pelvis, and especially on the genital organs of the female."

In no instance have fibrinous exudations in the cavity of the peritoneum been found by these authors. The condition of the small intestines has received the closest attention; their walls were thickened and pulpy from oedema of the mucous membrane and submucous tissue. The duodenum and ilium were more commonly affected, and to a greater extent than the jejunum. In some instances the mucous membrane was pale throughout, in others the lower part of the ilium only, or the duodenum only was hyperemic. The vascularity of this membrane was observed either as a uniform arborescent venous injection, affecting large tracts of the intestine, particularly the lower part of the ilium; or as patches of variable extent in which the redness was punctate, and of a bright colour, frequently with spots of ecchymosis and an exudation of tenacious bloody mucus. The villi were also swollen and prominent from oedema, especially throughout the jejunum. Where the morbid process was most intense as regards the mucous membrane, upon its surface and within its tissue was sometimes observed an effusion of a yellowish finely-granular fibrinous matter, such as occurs in ordinary diphtherite. The glandular structures were the seat of changes similar to those observed in the mucous membrane itself. Dr. Gairdner, in his report on the morbid appearances in eighty-nine cases of cholera, says,

"The most frequent of all the abnormal conditions of the mucous membrane, was the prominence of the intestinal glands, both

of the aggregated and solitary, but especially of the latter. This condition, the 'psorenterie' of some French writers, was found in about two-thirds of the cases."

The same condition extended to the patches of Peyer. The mesenteric glands generally presented no morbid changes; the large was more rarely affected with hyperemia and ecchymosis than the small intestine. In many instances it presented nothing abnormal beyond a greater distinctness of the solitary glands.

The general appearance of the evacuations in cholera is well known; their reaction was alkaline or neutral. Dr. Parkes has particularly noted the small amount of the so-called extractives, or incoagulable organic substances, thrown out in cholera, a circumstance which seems to indicate a suspension of the proper excreting function of the mucous membrane during the algide stage. This observation is considered important as bearing upon the pathology of the disease. The observations of various pathologists respecting the appearances presented by the spleen, may be expressed in the opinion of Virchow, who, in a report of seventy cases, states, that he arrived at no definite result as to the morbid changes in that organ. The condition of the liver after death, in the algide stage of cholera, may be set down as being generally diminished in bulk, the tissue flaccid, and the capsule finely wrinkled. The larger veins, both the hepatic and the portal, but especially the latter, were often full of dark, viscid blood. The lobular appearance of the secreting surface was indistinct, and the whole tissue of a rather lighter red than usual. The secreting structure, on a microscopical examination, presented nothing abnormal. The gall-bladder was usually distended with dark bile, generally viscid, but sometimes more watery than natural. In most cases the gall-ducts were not obviously affected. The mucous membrane of the gall-bladder and ducts was healthy, except in some rare cases, where it was the seat of morbid changes, similar to those occurring in the intestinal mucous membrane. The kidneys were of the natural size, their surface was mottled by arborescent venous injection, and, on section, the same venous hyperemia gave a dark colour to the cones. The secreting structure rarely presented any obvious morbid change. As regards the thoracic viscera it was observed that, in the majority of cases, fatal in the algide stage, no other morbid change existed than engorgement of the lower and posterior parts of the lungs with dark blood. The heart and pericardium usually presented little that was abnormal. Reinhardt and Leubuscher remark, that the right auricle and

ventricle were generally distended with blood, the left containing, in proportion, but a small quantity.

Most observers admit that the physical condition of the blood in the cavities of the heart and large vessels was more commonly dark and fluid, or less coagulable than in other diseases. Dr. Gairdner differs from this opinion, and believes that the epithets "dark" and "venous" are, in no degree, more applicable to cholera blood *after death* than to that in every ordinary form of fatal disease. Notwithstanding this excellent authority, the weight of evidence tends to prove that, in a large number of cases, the coagulable properties of the blood were lessened, while the blood drawn during life, in the cold stage, was notoriously viscid and tar-like,—a change, as will be seen, depending upon a loss of its water, and imperfect oxidation arising out of venous retardation. With respect to the alteration in the saline constituents of the blood, Dr. Gull quotes the investigations of Dr. Carl Schmidt and Dr. Garrod. We transcribe the conclusions arrived at by the latter:—

"That in cholera the saline constituents of the blood are not only not decreased in amount, but sometimes exist even in increased proportion, and that the diminution of its alkaline reaction is not due to the loss of salts, but to the impeded excretion of organic acids, which are constantly being formed in the system.

"That urea usually exists in increased quantities in cholera blood, but that the amount differs considerably in the different stages of the disease; but being small in quantity in the intense stage of collapse, increasing during reaction, and in excess when consecutive febrile symptoms occur."

The morbid appearances, when death occurred after reaction, may be generally stated as maintaining the characteristics we have just mentioned, though generally in a less prominent degree.

The *pathology* of cholera, as deducible from the foregoing cadaveric phenomena, must lead us to regard the gastro-intestinal mucous membrane, with its ganglionic nervous centres, as the focus of the morbid action. Whether there be a primary absorption of poison into the blood or not is at present unknown, though our knowledge of the laws by which many deleterious agents produce their effects renders the former hypothesis highly probable, namely, that a specific poison acts upon the ganglionic nervous centres, or upon the mucous membrane itself. The examination of the fluids effused from the mucous membrane gives no evidence of active plasmatic changes taking place in them, on the contrary, the large amount

of fluid thrown out, its low specific gravity, and its other physical characters, indicate an almost passive exosmosis as through a dead membrane. Some observers have referred the morbid changes to a *catarrhal condition*, others have regarded the disease as a form of *serous hemorrhage*, and the Berlin pathologists have designated it *a destructive diphtheritic inflammation*.

Dr. Gull well writes:—

“We believe that, for the present, such generalizations, however plausible, are of little value, and that we arrest inquiry by their adoption. The depression of the capillary power, the extreme exhaustion of the great ganglionic nervous centres in the abdomen, the passive character of the lesions of the mucous membrane, its normal action being reversed to a fatal exosmosis, are peculiar to cholera, and give it an individuality which forbids our merging it for the present in any general category.”

There is an hypothesis regarding the nature of cholera, based upon the supposition of a suppression of the hepatic secretion, and consequent congestion of the liver. This hypothesis is unsupported by anatomical facts. The hepatic function does not appear to be subject to any further derangement than that which naturally follows upon the retardation of the circulation during the stage of collapse. This is an important fact; for erroneous suppositions on this head have widely influenced the treatment of the disease on the part of those who, with Dr. Ayre, advocate the administration of calomel. This gentleman writes:—

“Now there is one condition which is uniformly and conspicuously present in malignant cholera, and is, indeed, characteristic of it, namely, a suppressed or suspended secretion of bile, as shown by the diminution, and, at length, the total disappearance of it from those watery discharges which are poured so profusely from the stomach and bowels. As a consequence of this cessation of the hepatic function, an accumulation,” he adds, “will take place in the liver, of venous blood, and an impeded circulation result from it, producing a congested state of that organ; and, subsequently, by a retention of the blood in its course through them, of those abdominal organs whose circulation is associated with it. Now, the congestion thus produced in the portal venous system of the liver and its associated organs constitutes the stage of collapse, and under various modifications and grades of intensity, whose real nature and amount are unknown, forms the essence of it in all.”

Such a train of reasoning, as Dr. Gull observes, “is unsupported by any evidence.” The serous, rice-water character of the cholera stools is obviously due to special pathological changes in the mucous membrane, and not to any merely me-

chanical congestion of a secondary kind, as here stated. The appearances after death in the chest and cranium show that the viscera in these cavities were not primarily affected. The same observation applies to the congestion of the veins, and the effusions under the membranes and into the ventricles of the brain. Although the blueness of the skin, in many cases, may be in part due to a general retardation of the venous circulation, it is, we believe, more commonly owing to a condition independent of such a cause and appears to be a pathological indication of a loss of tonicity in the capillaries and capillary veins. Many of the symptoms of the cold stage evidently depend upon the loss of fluids from the blood, and, consequently, have been removed in a sudden and remarkable manner in those cases where saline injections have been successfully thrown into the veins.

Having so far detailed the pathological appearances and inferences, which we have but briefly analyzed, Dr. Gull proceeds to inquire—Is cholera a zymotic or contagious disease? In reference to the former, he observes:—

“Cholera has been classed amongst zymotic diseases; but its clinical history and morbid anatomy are opposed to the theory of its being due to zymosis, in a strict sense of the term. In a zymotic disease, the *ζυμη* induces certain plasmatic changes, from which results its augmentation. In cholera we have no evidence of such changes, the alterations in the blood, as far as they are yet known, being referable to the loss of its fluid parts, in accordance with the physical laws of exosmosis. The local morbid action appears to be of a negative rather than of a positive kind. The marked depression of the organic functions, and the morphological characters of the effused fluids, as well as their general physical properties, indicate a passiveness almost peculiar to cholera. In cholera the onset of an attack is frequently sudden, and the effects apparently direct, such as would follow the immediate action of an extraneous poison upon the body. The zymotic process is more gradual, and the symptoms follow a more constant rule with respect to time. Cholera appears to consist of but one single series of actions, which may vary in intensity through every gradation, but, throughout, maintain the same character of passiveness. There is no febrile stage to which zymotic changes, as ordinarily observed, and the production of a *materies morbi*, may be referred.”

The theory of Dr. Snow, of the direct application of a *materies morbi*, is at variance with the remark of Schmidt, that those who were occupied in examining the discharges, and inhaled the effluvia of them, felt no ill effects. These discharges were also brought into contact with abraded surfaces with im-

punity. They who were engaged in making post-mortem examinations of cholera subjects seemed to incur no risk of thereby taking the disease. Schmidt states, that within his own knowledge, a drunken man by mistake swallowed half a beer glass of the vomited matter, slept away his drunken fit, and remained well. He adds that many similar facts were made known during the epidemic of 1831-32, when medical men, by way of experiment, swallowed these transudations without injury; but, with laudable humility observes:—"I have not had self-denial enough to institute these experiments on myself." Mr. Marshall remarks that the performances, here alluded to, were limited to *tasting the vomited matter only*, and did not extend to *swallowing the alvine evacuations*. On this we shall only observe *chacun à son gout!*

The report proceeds to observe that many experiments have been made upon animals with the blood and effused fluids in cholera, with the view of determining whether the disease is communicable by them. Fresh cholera blood and filtered rice-water fluid have, in different instances, been injected into the veins of dogs, cats, and rabbits, without producing any effects that indicate a specific poison, the results being only a temporary depression, and in some cases slight diarrhoea. The evacuations have also been thrown into the stomachs of these animals by Mayer and Marshall, but with uncertain results. In eleven instances no ill effects followed, beyond temporary depression and slight diarrhoea. In six, death took place in from twenty-four hours to five days. The experiments instituted by Dr. Lindsay, and detailed in a pamphlet reprinted from our esteemed cotemporary, "The Edinburgh Medical and Surgical Journal," furnish results somewhat different. To its pages we shall refer our readers as setting forward the climax of man's invention for experimental research, and the acme of animal suffering in its ministration to science. These experiments lead to the inference, that cholera was simultaneously developed in four animals, and proved fatal in two of them. Mr. Marshall observes of his experiment, that,—

"Equivocal rice-water discharges, blueness, coldness, cramps, tarry blood, and non secretion of urine, are not in the catalogue of the effects, and so long as we know so little as a ground of comparison of the pathology of natural cholera in animals, we cannot draw safe conclusions from the phenomena produced by the administration of the cholera evacuations."

Though Dr. Lindsay's experiments seem to argue more directly in favour of the communicability of the disease, we

cannot divest our minds of the supposition that, had equally miserable animals been subjected to a similar ordeal, from which cholera infection might be presumed as being excluded, closely analogous results would equally have ensued.

The next subject of importance, entered on in the report, is the consideration of the *premonitory diarrhoea*, its characters and frequency. This has been made the ground of a special essay by Dr. M'Loughlin. The numerous replies received to the queries of the College of Physicians, all serve to establish the *frequency* of a stage of diarrhoea, lasting from a few hours to several days. Dr. M'Loughlin, in wrathful indignation at such a statement, leads us to believe that, without diarrhoea there can be no cholera, and having eased his mind in this particular by a summary detail of cases, informs us, that the College of Physicians have not in their Report advanced our knowledge of cholera on any one single point,—an affirmation which falls harshly on our ears, considering we have spent not a few hours in carefully studying its contents, as well as in submitting them to our readers. We trust, however, for the sake of science, this very candid expression of individual opinion will not occasion the labours of Dr. Baly and Gull to be considered as altogether valueless, or wholly prevent the diffusion of their work. In reference to the inquiry as to whether the premonitory diarrhoea of cholera is characteristic, we are informed that the diarrhoea premonitory of the severer symptoms of cholera was often feculent and bilious, and presented no characteristics whereby it could be certainly distinguished from other forms. There were, however, occasionally some subordinate points of slight diagnostic value; the evacuations were generally more profuse and liquid than usual, but otherwise of a natural appearance, often unaccompanied by pain, and passed without effort, the painlessness and passiveness giving a false security to the patient. It was not until the nervous system began to be depressed, and the feculent character of the stools was lessened or lost, and they became alkaline, watery, and flocculent, that they were distinctive. On this point, the experience of the profession appears to be uniform, and hence we may draw the following important conclusion:—that during the prevalence of the epidemic every case of diarrhoea, arising without obvious cause, may be regarded as a probable result of the specific poison. The question as to how far collapse depends upon loss of fluids is next discussed. Dr. Gull observes, as many of the symptoms of this state of collapse depend upon the loss of fluid, it has been too absolutely inferred that the general phenomena of the disease are always in a necessary re-

lation to the amount of these effusions. In tropical regions, where either the intensity of the poison is greater, or the predisposing conditions of constitution are more favourable to its operation, it appears by no means unfrequent for the strongest subjects to fall into sudden collapse, without any very notable loss of fluid. Such facts are authenticated by so many careful writers, as to leave us no doubt of their occurrence. In temperate regions, similar cases, though rare, are not unknown; and in a less marked degree, are within the experience of most who have seen the disease in its severer form. Dr. Gull adds, even when the loss of fluid is very great, it is doubtful whether death is due to it alone, since we often see patients in an apparently equally hopeless state, collapsed, and bloodless, whose tissues, as soon as the nervous system begins to react, recover their elasticity before any amount of absorption could, from the circumstances of the case, have occurred.

Next in the Report follows the pathology of the stage of reaction. The so-called consecutive fever has been divided into different forms according to the prominence of particular symptoms. Such divisions we must regard as being of little practical value, as their boundaries are not constant, and they mislead by fixing the attention exclusively upon one organ, where, from the circumstances of the case, the whole system is more or less deranged. Amongst the most important of these secondary lesions those of the kidney are foremost. Not only are these organs, in the first stage, occasionally subject to the cholera process, but, from the complexity of their circulation, the state of the blood, and the depressed nervous power of the ganglionic system, they slowly recover their function, and, from the persistent congestion, the secreting structures undergo changes similar to those found in acute albuminuria from other causes. As to the frequency of albumen in the urine, after the cold stage of cholera, there is a universal accordance amongst different observers, both in this country and on the Continent. The communications received by the College show, that the symptoms of the consecutive fever were most frequently referable to the defects in the urinary secretion. The frequency of the occurrence of this fever varies according to the experience of each. The mortality from the disease generally leads to the inference, that nine-tenths of the deaths took place in collapse, or during imperfect reaction, and not more than one-tenth in the consecutive fever, which is stated as being probably above the average. The occurrence of a cholera exanthema, as first noticed by Dr. Babington, is stated as not being of, by any means, frequent occurrence. The sta-

tistics of deaths from cholera prove that the epidemic was especially fatal in early life and old age, while the observations of Briquet and Mignot affirm, that constitutional weakness alone was not a very evident predisposing cause to this disease. Difference of sex does not appear to have exercised any material influence on cholera. Respecting the result of habits, Mr. Grainger's observations may be received, that "abundant evidence was afforded during the late epidemic, that habitual drunkards were highly predisposed to cholera, and of them a large number perished." This section of the Report concludes by an investigation of the relation of sporadic to epidemic cholera, on which subject we subjoin the substance of Dr. Gull's observations:—

"Our knowledge of the morbid anatomy of sporadic or English cholera is too defective to enable us to institute a strict comparison on this head between it and the epidemic form; nevertheless, facts are sufficient to show that there is an essential difference between the two diseases."

It will be evident, from the foregoing observations, that the state of our knowledge of this disease rests equally on negative as positive data,—who will take upon themselves to declare which is of the greatest value? Those who, uninfluenced by theory, dispassionately reflect on the information we have supplied, will, we are confident, freely admit, that in satisfying us of what cholera does not indicate, and in showing us those physical changes which more particularly accompany the state of collapse, pathology has not failed, in the hands of Dr. Gull, to render good service to the cause and progress of our science; while, at the same time, they must, to use the words of Dr. Cormack, avow with frankness their conviction—

"That, notwithstanding all that has been written regarding cholera, sufficient data do not yet exist to entitle any one to feel quite confident that their opinions are built upon an unassailable foundation."

This physician's admirable little work will be found to contain a chapter on the manner of studying cholera, which merits our warmest approval; from which, previous to proceeding to the consideration of the treatment of this disease, we extract the following passage:—

"Therapeutical experiments must be jealously corrected by the observation of simple cases, which have been mainly confided to nature; and *recoveries* must not be promiscuously set down as *cures*."

For one who has carefully reflected on the probable etiology and pathology of this disease, fifty have proposed specific remedies. During the late epidemic, seldom a week passed without the public being informed of some undoubted cure newly sought out. Ignorance and folly painfully conjoined to trifle with human life; and, with the best possible intentions, caused a considerable deal of mischief. We can understand how a number of kind-hearted, soft-headed, good-natured, worthy old folk, hearing that something did a great deal of good to somebody, should at once fancy that it would be not only useful, but right, "to make that public," and in an outbreak of philanthropic enthusiasm, lose no time in "writing to the papers," and then, perhaps, think no more about it; but how individuals pretending to medical knowledge could pen half the sheer nonsense that has appeared on this disease we know not. The most dangerous writers of the latter class are those who, confounding symptoms with the disease they indicate, and mistaking consequences for causes, originate or adopt some erroneous pathology, which they henceforth religiously believe in, and very perseveringly adhere to. The strongest feature appertaining to this medley of opinions is the extraordinary success said to be attendant on the employment of the means which each one advocates. He who stimulates, and he who depresses; he who bleeds, and he who does not; he who gives aperients, and he who abhors them; he who administers mercury, and he who withholds it,—in fact, they who run diametrically counter one to the other, are ready to produce the most convincing proofs of astonishing cures when everything else had failed.

That cholera is a fearful and terribly fatal disease is, alas! too evident; that in many cases our best exertions fail to arrest the hand of the destroyer is, we confess, equally true. Are we, therefore, as medical philosophers, to succumb to the general panic? Is it fitting that we abandon the solemn trust committed to us, and, grasping the shadow of boasted specifics, lay aside those several remedies which have done us good service in the hour of trial? We have had very painful experience of this affection; and though in a large number of patients under our charge, a considerable, but by no means unusual, mortality ensued, we have still felt satisfied, that for their aid medicine had not been wanting, because disease had triumphed. The truth is, that in very many cases the best directed human means must prove unavailing in this, as they do in other affections, in which the vital powers receive a shock sufficient to paralyze the several organs through which remedies can alone act,—when

a condensation of disease, as it were, takes the citadel by storm, while, at the same time, intercepting the supplies for its relief. The danger we would, with all earnestness, warn medical men against is, the losing confidence in their medical resources, and adopting popular remedies. The first is evidence of a weak, vacillating mind, that dares not look danger in the face; the second betokens a craven spirit, which hopes that its own errors may either pass unnoticed among, or be eclipsed by, those of others.

Our etiology and pathology of this disease have shown when and how our efforts should be directed. It is, as the report informs us, well ascertained, that in the largest proportion of cases, at least in European countries, the poison of cholera produces its first effects on the system *gradually*, as indicated by diarrhoea, varying in duration from a few hours to several days before intense symptoms supervene. During this, the period of invasion, it is highly probable, nay, experience assures that it is certain, the morbid effects may be at such a stage *often* successfully combated. The necessity of correctly estimating the significance of this premonitory symptom cannot be too fully impressed. The Irish Board of Health, whatever the peculiarities of their views may have been, did good service to the community, when they wrote:—"Let it then be clearly understood, that when the epidemic is prevalent, mere looseness of the bowels, with or without pain, may be the commencement or first stage of cholera; that the disease is generally curable in this stage; and that not a moment should be lost in applying for relief." Some have been found, who, regarding this symptom as an effort of nature to throw off a *materies morbi*, have applied their theory to practice, and thereby increased the fatality of the disease; while others, adopting equally erroneous pathological views, have advocated specific remedies, which they have regarded as curative agents, because under their use the patient recovered.

We accord to the sentiments of the Report of the College of Physicians, that no antidote or specific medicine is known to neutralize the cause of cholera, or with certainty to arrest its effects; from this we have then every right to infer that the closest adherence to those medical principles which the analogy of various diseases, and a just estimate of post-mortem appearances furnish, argues most favourably for the general result, when, to use the words of Dr. Cormack, "a more successful treatment is to be discovered by a judicious application of the means which we possess, than by searching for some new specific." Though the amount of success obtained by early treatment could not be

accurately determined, the general results of preventive measures must be regarded as being apparently very favourable, as shown by the small proportion of cases which passed into the severer forms of the disease subsequently to early treatment.

The first matter for the consideration of the practitioner is the position most suitable for an individual attacked. A recumbent position is, as the Report impresses, proved by experience, and also by the nature of the case, to be a most important measure. It prevents exhaustion, favours the circulation, and lessens the frequency of the evacuations. It is highly probable that cases, which otherwise resisted the action of medicines, would have readily yielded had the horizontal position in a warm bed been strictly enforced.

In the treatment of the premonitory diarrhoea, it cannot be a matter of doubt that the earlier the disease is encountered, the greater, in an infinitely high ratio, are the advantages under which medicines are employed to counteract it. What those medicines are, which experience proves to be most deserving confidence, is a question that must receive a general rather than a special reply. We would state them to be—first, those known to exercise a certain power over the depressed energies of the affected intestinal mucous surface; and second, those calculated to sustain the diminished and impaired vitality. Many years since Dr. Graves advocated the employment of acetate of lead and opium, in combination, as pills, to be given every half hour until the rice-water discharges from the stomach and rectum began to diminish. Since then many writers have borne testimony to the value of their administration. It is needless, therefore, we add to theirs our own experience in their favour, further than to say that, in a fluid form, the same remedies have at times seemed to better fulfil that which was required. The value of this combination seems to rest in its proving an astringent and sedative of great power, which exercises a beneficial influence in checking the serous discharges, and thus, in a measure, preventing one of the chief elements in the production of that collapse so generally fatal. Various remedies of this class, administered with a similar intention, have been advocated by different medical men, and each has borne testimony to their particular advantages, not as specific remedies, but as means generally conducive to promote the same end. Amongst these we might mention many tonics and astringents, both mineral and vegetable, as well as other remedies known to exercise certain actions. Thus, nitrate of silver, sulphuric acid, nitrous acid, nitro-sulphuric acid, alum, gallic acid, quina, creasote, and turpentine, have each, under particular circumstances, been

employed with advantage during the approach of this disease. In the fully-developed stage it is obvious that medicines administered internally must be of small power, since the pathological condition of the gastro-intestinal membrane is such that absorption is then almost, if not quite, suspended; and medicines when retained in the stomach form but an inert accumulation. Dr. Gull's observation on their administration at this period we particularize:—

“ The theory of their occasionally acting by sympathy, which must be regarded as a relic of a therapeutic superstition long since exploded, and untenable in any condition of the system, is especially so in the collapse of cholera.”

The calomel treatment of cholera stands foremost, from having in this country been more fully tested than any other. The theory of the disease, which has chiefly led to its employment, is not supported by anatomical facts. The absence of bile from the evacuations appears to be merely a subordinate result. Calomel can be administered only on empirical grounds, and its value must be determined by the results so obtained; for there appears to be no argument in favour of its exhibition either from analogy or pathology. How far Dr. Graves had anticipated these sentiments of the Report may be inferred from the following quotation expressive of his opinions in the year 1832:—

“ Before we proceed further, I may observe that the principle on which the calomel treatment was employed in cholera arose from almost constantly observing that there was a total deficiency of bile in the stools. Soon after the supervention of an attack, the alvine discharges were observed to be white, and without the slightest tinge of bile; and on this very remarkable symptom practitioners dwelt almost exclusively, thinking that the patient's only chance lay in restoring the secretion of the liver. Now it is obvious that the absence of bile in the stools is no more a cause of the disease than is the deficiency of urea in the kidneys, or of serum in the blood. Viewing the disease in this light, it would be just as reasonable to give a diuretic to restore the secretion of the kidneys, as to give calomel to produce a flow of bile. The liver ceases to secrete, not only in consequence of the injury done to its vitality by the proximate cause of cholera, whatever that may be, but also from a mechanical cause, namely, from a diminution in its supply of blood.”

Notwithstanding these, which we consider sound pathological views, very many practitioners adduce extraordinary testimony to the efficacy of calomel as a curative agent. Dr. Ayre particularly, in a pamphlet already referred to, affirms that calo-

mel, in small doses, according to prescribed conditions, and without any other adjuvant than cold water *ad libitum*, exhibits a remedial power well nigh approaching those of a specific, and very loudly cries out against Dr. Gull's conclusions, that calomel was inert when administered in collapse, and that the cases of recovery following its employment at this period were due to the natural course of the disease, as they did not surpass the ordinary average obtained when the treatment consisted in the use of cold water only. We do not question the truth of Dr. Ayre's assertion, that many recovered while taking calomel according to his method of prescribing it. Recoveries are not, however, cures. We fully agree with Dr. Gull, that an analysis of Dr. Ayre's cases does not sustain the favourable opinion he would impress respecting this remedy, since the deaths were 365 out of 725 unequivocal cases; while, under various and opposite plans, the recoveries, even in severe cases, averaged from 45 to 55 per cent., according to the period of the epidemic. That Dr. Ayre's views of the action of this remedy are based on erroneous pathological conceptions we fully believe.

Treatment by calomel, opium, and stimulants, or that which has been termed the "rational treatment," has not proved much more satisfactory. The combination of these three remedies promised to fulfil the supposed indications of this stage. The calomel was given to restore the functions of the liver, and as an alterative of the morbid action in the gastro-intestinal mucous membrane; the opium to allay irritation and arrest the discharges; and the stimulants to counteract the depression of the nervous system. Experience has not responded to the expectation such a combination aroused. At the same time the results were not altogether so indifferent as when calomel was exhibited by itself. Although opium and diffusible stimulants, brandy, camphor, and ammonia, were useful at an early stage of the disease, as collapse set in they not only failed to produce any favourable result, but were after found to aggravate the symptoms. Stimulants, especially the various preparations of alcohol, did not act as restoratives in collapse, but often increased the irritability of the stomach, and added to the sense of oppression at the praecordia. On this subject Dr. Haines, in his pamphlet, containing many practical and valuable remarks, thus writes:—

"Circumstances which at an early period came to my knowledge, together with observation and reflection on the progress of the disease, induced me soon to discard much of the stimulating plan of treatment; and in the epidemic of 1834 to never once recur to the use of brandy or other strong spirituous liquors."

The evidence before the College of Physicians of London is sufficient to prove that the results of practice were very much in favour of that method of treatment and employment of remedies which Dr. Graves may be said to have been the first advocate of. Opium, in the stage of collapse, was found injurious, as increasing the cerebral oppression, and embarrassing the system during reaction. The experience of the profession, as conveyed to Dr. Gull, is evidently at variance with the use of stimulants, which are generally described as tending to aggravate the disease. Chloroform, of which much was expected, has been found evanescent in its effects and unsatisfactory in its results. The use of cold water and ice has, in the majority of cases, been attended with at least a mitigation of the suffering, and proved at the same time grateful, urgent thirst being a prominent symptom. Cold water was the drink generally preferred, and good results were often observed when it was taken freely, in repeated and copious draughts, although it excited vomiting. In smaller quantities, and iced, it was refreshing to the system, and allayed the irritability of the stomach. Ice was generally grateful to patients in impending or approaching collapse, and probably acted favourably upon the mucous membrane, and served to arrest the discharges.

The use of salines has been energetically adopted, and warmly advocated by many who, with Dr. Stevens, believed that their administration tended to restore to the blood a fluid similar to that lost in the early stages of the disease. There is no evidence that they possessed any influence over the local morbid action in the mucous membrane. It was not until this surface had in part recovered its function of absorption that any good resulted from their employment. The use of emetics originated also from erroneous views of pathology. They were given, at the onset of the disease, with the intention of cutting short the morbid action, by distributing the blood to the surface, and relieving the congestion of the intestinal mucous membrane; and they were also given for the purpose of superseding the irritability of the stomach set up by the disease. Their administration generally failed to produce the anticipated results.

Dr. Reid^a, whose lengthened experience and deserved reputation render all his observations worthy of close attention,

^a *The Pathology and Treatment of Cholera Asphyxia.* By ROBERT REID, M. D. T. C. D., F. K. & Q. C. P. I. Second Edition. Dublin: Hodges and Smith. 1855. Pamphlet, pp. 29. We regret that we did not receive this practical little essay until the greater portion of our review had been printed off, as we are thus precluded from noticing it at length.

has in the pamphlet before us described a condition of the system during cholera epidemics, in which the natural secretions are evacuated in increased quantity. In these cases he has remarked that a mustard emetic, followed by a warm purgative, has relieved the patient entirely of his disease, and, as he believes, has prevented the access of more serious symptoms. The selection of cases suitable for such a treatment would, we conceive, involve a large amount of practical knowledge.

Bleeding was formerly and is still by some advocated; experience, however, leaves no doubt that, in the premonitory and early stages, it is in general to be avoided. In the consecutive fever, local depletion has seemed to be more directly indicated; in this condition experience also shows that its employment requires much caution.

We might extend this notice of remedies to a much greater number, and include many which the failure of legitimate medicines has called into existence. It is foreign from our present purpose to do so. In affording our readers the assurance of the College of Physicians, which we have already stated, *that at present no antidote or specific medicine is known to neutralize the cause of cholera, or with certainty to arrest its early effects*, we bid them but the more strenuously cultivate that knowledge which is power, being satisfied that it alone can enable them to meet the disease when the struggle comes.

The treatment of the secondary fever it is unnecessary for us to enter on, since each case may be a study in itself.

There are many valuable communications in reference to the pathology and treatment of this disease which have at intervals appeared throughout the pages of our Journal: these we would gladly refer to did the necessarily limited range of such a review as the present admit of our doing so. We must, however, hasten to bring our labours to a conclusion, feeling satisfied that though we have offered no rule for guidance, yet in calmly and dispassionately discussing what and how much we know, in admitting that on many points our knowledge is but limited, and our power but slight, we afford at least sufficient materiel to the reflective mind, which we doubt not will bring forth good fruit in its due season.

Quarante Années de Pratique Chirurgicale. Par Ph.-J. Roux, Chirurgien de l'Hotel Dieu, &c. Tome I. Chirurgie Réparatrice. Paris: Masson. 8vo, pp. 474.

WHEN a man has laboured with honour and success in his vocation for well nigh half a century, and has passed away amid the regrets and reverence of survivors, it is impossible to notice a work that bears his name in a spirit similar to that which would influence us in commenting on the labours of the living. Criticism is to a great extent silenced, or at most it speaks with warning voice to the bystanders. In such cases the best mode of fulfilling our duty to the public is to point out the position which, in our opinion, is due to the author in the page of history, and as far as possible to dissociate him from the accessories which the personal feeling of contemporaries is prone to place around him. This process, frequently disagreeable and at no time easy, enables all to judge for themselves, and to weigh opinions and statements at their legitimate value. In the present instance there is less difficulty in arriving at a proper estimate, in consequence of the great unanimity which exists among those who have been M. Roux's associates, in their view of his character. The extreme kindness of his nature, his gentleness to his patients, and fatherly good-nature to his pupils, have endeared his memory to many hearts. Few, we suppose, who enjoyed such popularity with the public, were so free from enemies among professional rivals. There was indeed a sort of competition between him and Dupuytren during the life of the latter; but the calibre of the men was so different, and their special merits so opposite, that the contest was carried on upon unequal terms, and we believe scarcely went beyond the bounds of fair professional emulation. Roux never had the force or scientific prescience of his great rival: his merit was peculiarly that of the operative surgeon; delicacy and neatness of hand were his great characteristics; and many of our readers can no doubt recall to mind the elegance with which he used his bistoury, and his fancy for operations requiring careful dissections. The manual part of surgery was his forte, and he cared little for exercising his skill except upon it; he was no theorist, and contributed wonderfully little to the science of the profession; his writings are neat in their style, but, like his oral instructions, diffuse and deficient in logical force. His extreme *bonhomie* never allowed him to contradict any one, or to advance his opinion in a manner calculated to wound the feelings of another; hence they are sometimes expressed in terms so ambiguous as to render it a matter of difficulty to

ascertain them with exactitude. The form chosen for the work at present under review has led to an exaggeration of these faults of style; it is epistolary, the letters of this first volume being addressed to Mr. Lawrence. We are told in the editor's preface, that the composition of four volumes was complete, and that the first had been almost printed when M. Roux's death took place, and that a commission of five members of the Society of Surgery of Paris has undertaken the revision of the work.

The present volume is devoted to "Chirurgie Réparatrice," which is thus defined:—"When the hand of the surgeon reforms after any manner, or reconstitutes a part which is deficient or seems to be deficient, which is destroyed in whole or in part, or at least appears to be so: when it causes a part to spring up afresh, which appeared not to have any existence, or which in reality had none."

The tendency of his mind to give undue prominence to minutiae rather than to seize upon broad principles, is well shown by the many pages which are occupied with arguments in favour of sutures, and remarks on the various kinds of suture adapted to different reparatory operations; the substance of which may be expressed in a few words. The twisted suture is his favorite, and in shallow wounds is most generally useful; he discards it in operation on the perineal region, having found it fail in his first case; the quilled suture succeeds better here, as in all cases where it is essential to procure union of a deep wound. In staphyloraphy the simple suture obtains his favour, but we have not found any mention made of Mr. Fergusson's use of the slip-knot or common noose, which is the easiest and quickest of application. A large space is devoted to operations upon the palate: these were his especial domain, and he asserts with just pride his claim to be the originator of Staphyloraphy. A sketch of the circumstances attending his first case may not be uninteresting to our readers. In the year 1819 a student named Stephenson, a native of Canada, presented himself to M. Roux at the conclusion of his studies in Paris; in the course of conversation M. Roux discovered that he laboured under a simple congenital fissure of the soft palate; a malformation of which he had not previously seen an example; upon the instant he conceived the idea of remedying it by operation, not being aware that Graefe had tried it three years previously in a similar case, without success. The operation was performed two days after, and Mr. Stephenson was able in eleven days more to read an account of the case at the Académie des Sciences. Ultimately the improve-

ment in his powers of distinct articulation was so great as to enable him to fill the Chair of Anatomy at Montreal. The full result of this success is given in the following terms. "I have performed suture of the velum palati for congenital fissure one hundred and twenty times; and if I add to this first great category the various other cases to which I have had to apply staphyloraphy, properly so called, or some similar operation, I attain a total of 140 cases." The great similarity of most congenital fissures of the soft palate renders the operative proceeding in general alike in all. M. Roux's routine practice consisted in, first, placing the threads; secondly, paring the edges; and thirdly, tightening the ligature; he preferred to commence by inserting the ligature, probably because he did so in his first case; his assigned reasons scarcely satisfy us. He says he never tried the other order of procedure, although he found the loops of the ligatures in the way, and liable to be cut while the edges were being pared, an accident which happened to him several times. The only case in which it seems to us advisable to follow M. Roux's inverted order, is when we fear that the patient will lose courage, or become unruly, and so compel us to desist altogether from the operation; in such a case the insertion of the threads might be first proceeded with, and if they require to be withdrawn, no appreciable injury has been done to the soft parts, and at some more favourable opportunity the operation may be again attempted with the parts in as advantageous a condition. Care in selecting the proper age will probably suffice to guard against this *contretemps*, which even in M. Roux's extensive practice only occurred twice. He invariably inserted the ligature from behind forwards; each ligature consisted of two or three threads flattened into a little ribbon, and well waxed; he used three points of suture, tying the inferior first, then the superior, and last of all the middle one. When the hard palate was cleft or perforated, he seems to have preferred a plate or obturator to remedy this portion of the malformation, and the cases which he gives as the exceptions to this practice only amount to four; in these the operative procedure was after the Indian method, and consisted in detaching a portion of the membrane covering the bones at either side, leaving it attached by a pedicle; and by a movement of rotation approximating it to its fellow on the opposite side, and there uniting it by sutures: in three of the cases he succeeded; in the fourth the flaps mortified.

There is another mode of filling this space, which has been tried with success by, we believe, Mr. Avery of London. It is founded on the observation that in these cases the bones are

not only separated, but form portions of a much higher arch than natural; hence it is found possible, by detaching the fibromucous covering from them extensively, so as to form flaps adherent only at the alveoli, to bring the edges of these flaps freely in contact at a level below that of the bones, especially if this dissection be continued back to the posterior margin of the palatine bones, thus making one large flap of the soft palate, and of the soft coverings of the hard. There is one point in M. Roux's proceeding which remains to be noticed: it belongs to the question of accessory incisions. Our readers are probably aware that Dieffenbach practised lateral incisions through the soft palate, parallel to the cleft, with a view to allow its edges to approximate more readily, and that Mr. Fergusson divides the muscles of the palate for a similar reason. Roux, who was acquainted with Sedillot's modification of the latter operation, did not approve of it; he preferred to cut across the attachment of the soft palate to the palatine bones; and we have no doubt, that such an incision, if not carried too far, would facilitate union in those cases in which the operation we have described above for closure of the hard and soft palates simultaneously is not performed. With regard to Mr. Fergusson's, we do not think it necessary in all cases; and if not necessary, then not advisable.

The subject of staphyloraphy has naturally occupied our attention so much, that we can do no more than barely notice the remaining portion of the present volume. The style of the work is such as to render it difficult to formalize either the information or the opinions contained in it. There are, however, a few scattered precepts which are concise as well as valuable. In speaking of autoplastic operations in general, he says:—"Where one flap suffices to fill a vacuum, it is preferable to two; it seems as if nature had less difficulty in effecting the union of one flap than of two; while it is also more readily submitted to the attention and care of the surgeon. . . . The flap should consist of skin alone, or of skin and a fair thickness of muscle; aponeurosis alone forms a bad lining to a flap of skin. . . . In operations, whether by *torsion* or *glissement*, as little displacement as possible should be allowed. . . . If it be necessary to choose between a flap more or less altered by cicatrical tissue, and one of a healthy character, but badly situated, I prefer that which can be placed *in situ* with the smallest amount of violence." In the letters on hare-lip there is much desultory information of a practical nature: he states his experience of the operation in extreme infancy,—that he has had almost as much failure as success—sometimes no adhesive in-

flammation arose ; sometimes ulceration occurred, or violent disruption ; frequently fatal fainting, and once fatal hemorrhage ; and with regard to the most suitable age, he would prefer, when possible, not to operate before the third or fourth year, especially in double or complicated hare-lip. In double hare-lip, where the central portion is retained, he deems it best to unite the lip independent of it, and by a secondary operation to adapt it to the septum narium ; in this way the flatness and deformity of the nose are best remedied.

In concluding our notice of the first volume of forty years of surgical practice, we must say, that to those who choose to give sufficient time and attention to its perusal, it will afford much practical information, conveyed in a manner which, though extremely desultory, is not fatiguing. The addition of a good index or table of contents would render it useful for reference, as the case-book of such a veteran in surgery ought to be. It does not profess to be more, and those who look for anything like systematic surgery in it will be disappointed.

The admirable manner in which the printer and publisher have fulfilled their duties ought not to be passed over without a word of praise.

On Pain after Food: its Causes and Treatment. By EDWARD BALLARD, M. D., &c. London: Walton and Maberly. 1854. 12mo, pp. 136.

IT is the misfortune peculiar to authors on stomach diseases that they can never address themselves to their professional brethren, who alone ought to be the exclusive object of instruction, but they always have an eye turned round on the public : like an Irish barrister, of some celebrity in former days, who, when reprimanded by the judge, who assured him that he could hear him perfectly without his speaking so loud, answered that he cared not whether his lordship heard him or not, but what he wanted was to be heard by those outside the court. The stomach is the organ which, entering into our daily and hourly enjoyment, always interests the non-professional reader ; and the author who has seized upon the very symptom which has been felt at some time or other by every human being in our age and country as the title for his book, has done his best to attract a numerous body of readers from among the public at large.

Notwithstanding the unfavourable presentiment suggested by the title, still we proceeded to read the pages of the work

(commendable for its small size), with a hope of finding something to justify its publication, perhaps some new point of diagnosis, or some peculiar treatment hitherto undescribed; but we have met little else than disappointment. We can see nothing worthy of being extracted into our pages. And yet this one symptom, namely, pain after eating, admits of the most decided and practical diagnostic distinction, when viewed with reference to its kind and intensity, its locality, its *adjuvantia* and *laudentia*, the interval of time after eating at which it occurs, and the accompanying symptoms; and the materials for forming such distinctions are not difficult to be found. But Dr. Ballard, without attempting to add anything to the diagnosis, and without taking the slightest notice of many of the most important facts established by others, has rushed before the public, book in hand, as if about to reveal things which, up to the present, had remained hidden in the womb of time, while he has not added a single fact of his own to what was known before. His collection of materials is raked up according as they may be supposed to have a connexion with pain in the stomach; and, like a bad preacher, who is always repeating his text, he has endeavoured to show some coherency between them by means of a digest, to which there are numerical references in the body of the work, in order that we may keep in view the subject on which he has undertaken to write, which otherwise would certainly altogether escape our recollection.

We think that it will be impossible for even the most anxious or atrabilious of his hypochondriacal class of readers to wade through more than a few pages; and as for the members of the profession, we can discover nothing to repay them for the trouble of a perusal.

Pathological and Surgical Observations, including a short Course of Lectures delivered at the Lock Hospital, and an Essay on the Surgical Treatment of Hemorrhoidal Tumours. By HENRY LEE, F.R.C.S., Surgeon to the Lock Hospital, &c. London: Churchill. 1854. 8vo, pp. 232.

THE work before us contains papers on various points, some of which have already appeared in a different form, and others have not been previously published. The majority are subjects of much interest, and a recapitulation of some of them will show that they are of importance to the practising surgeon. As such, we may select "the causes and consequences of inflammation of the veins;" "the deposit of fibrine on the lining

membrane of veins;" "primary and secondary fibrinous deposits;" "suppuration in bone;" "purulent infiltration of bone;" "fixed and long-continued pain in bone, not dependent upon the presence of confined matter;" "the surgical treatment of hemorrhoids," &c. &c., each forming a separate paper or essay, illustrated by cases, and, in a few instances, accompanied by wood engravings.

The "Lectures" are six in number, the three first devoted to the consideration of "infecting and non-infecting sores;" "local syphilitic disease and inflammatory bubo," and the "means by which the syphilitic poison enters the constitution;" the three last, to syphilization, as applied to animals and man. We shall at present notice only one of the subjects dwelt on by Mr. Lee, and shall select, therefore, as perhaps being not least interesting to our readers, the chapter on "fixed or long-continued pain in bone, not dependent upon the presence of confined matter."

The causes of long-continued pain in bone Mr. Lee enumerates as four, depending upon the different pathological conditions they present, and he classifies them thus:—first, those dependent upon the formation of pus within the bone; secondly, those dependent upon the deposition of more solid material, arising from the poisons of mercury and syphilis; thirdly, those dependent upon a collection of tuberculous matter in bone; and fourthly, those dependent upon the presence of a necrosed portion of cancellous structure."

This list we do not believe is intended to be given as embracing all the causes of pain in bone; for neither neuralgia, nor the polynucleated cell-growth described by Robin as found between the external surface of the marrow and the internal face of the canal, is here noticed; and we know full well the pain, the almost agony, which occasionally accompanies these affections, and which, we conclude, must be equally familiar to our author.

He prefaces his observations with the remark that—

"The pain which attends suppuration in the interior of a bone is not always in proportion to the pressure exercised by the confined fluid; a very small quantity of matter, contained in soft, spongy bone, becoming a source of irritation, and appearing to determine to and fix in the part some pain depending upon constitutional causes, and which, were it not for the disease in the bone, might have fallen upon some other region. These morbid sensations once established will continue, although not originally produced by the local disease, until that is removed; and even after it has been removed, they will, as if from confirmed habit, show a tendency to

return to their accustomed place. After a time, however, if the cause which has determined the pain to a particular spot be removed, and no fresh source of irritation be present, the symptoms will cease."

To these facts we subscribe, but not to the reasoning in the case, adduced by Mr. Lee; for here the morbid local sensations and the morbid general sensations, are both clearly dependent on the same constitutional cause, namely, a system poisoned either by syphilis, or mercury, or both; and a local disease is consequently developed under circumstances (such as a slight blow, for instance) where in a healthy constitution no ill effects would have ensued. It is, therefore, the previous predisposition of the individual that gives rise to the disease of the bone.

The essential characters of the disease under consideration our author holds to be the same, whether the original cause of local irritation arises from confined purulent fluid, or from a deposit of morbid matter in a more solid form. They are enlargement of the bone, sometimes globular, sometimes ovoid; tenderness on pressure over one or more points, with dull, aching uneasiness by day, changed into deep-seated pain by night, of such severity as to preclude all rest till morning. In regard to treatment Mr Lee observes:—

"When the source of the continued irritation is thus situated within the bone itself, it seems not unreasonable to conclude that a similar plan of treatment would be available, from whatever cause that irritation may arise; and the results hitherto obtained would appear to lead to the inference that relief may be expected from an artificial opening in several classes of cases.

"Whenever there is reason to suspect that pain in a bone is kept up by the presence of some morbid or foreign matter in its interior, or by the pressure produced by a redundancy of bony deposit, it appears evident that the removal of a piece of the shell of the bone is the rational mode of treatment. An opportunity is thereby afforded at once for the escape of any confined matter, and the tension of the parts is relieved: and it appears not improbable, from the favourable effects hitherto obtained from this mode of treatment, that it may hereafter be extended to the relief of many cases of protracted and obscure affection of the osseous system."

Of the correctness of the author's views on this head we have no second opinion. We have seen so great relief follow from it, that we would advise its adoption in all cases of affections of the long bones of the extremities whenever ordinary treatment had failed, and with even a very moderate enlargement of the bone existing, provided the pain is *severe, fixed,*

and *long-continued*. It is the character of the pain that, in a very great measure, should be our guide.

"In determining where the instrument should be first applied, the most projecting point is to be selected as a rule. The next best is to select the most sensitive spot for the operation; but if there be no one spot peculiarly tender, then the temperature of the skin may be consulted; for it will generally be found to be higher over the immediate seat of the disease than elsewhere. Should none of these indications determine the precise spot at which the instrument is to be applied, and should the swelling of the bone extend for some distance, the opening should be made in a dependent situation."

In cases where it is deemed advisable to perforate a bone, Mr. Lee says:—

"I have been led to prefer the use of a trephine, of a very small diameter, in the first instance. It answers the purpose of an exploring trocar in soft parts, and appears to me to possess the following additional advantages:—A portion of bone is more quickly removed with a small than with a larger instrument, and the opening made requires less time to close subsequently. Should the first application of the small trephine not discover the disease, a second or a third opening can be made without inconvenience. When once an opening has been made into the bone, a flexible probe, introduced and turned in different directions, will generally enable the surgeon to determine what further portion of bone, if any, should be removed. Portions of the affected bone are occasionally very hard, and it may happen that a small segment only of a comparatively large trephine may come upon the softened bone (the remainder of the sawing edge being firmly supported by the condensed and solid structure). The operator will then have an intimation, from the yielding of the softened tissue beneath the pressure of the instrument, of being arrived at the disease; and in cases where a very small portion only of the bone is softened, the trephine may be worked deeper than is intended. Such an accident can rarely happen with a small trephine, with which the degrees of resistance of the different parts of the bone are very readily appreciated. It is quite possible, even with a large trephine, to miss an abscess situated in the interior of a bone; and, considering the time that its application requires, and the amount of bone involved, it becomes a subject of serious consideration whether a second or a third portion should be removed" ^a.

We fully agree with Mr. Lee in his observations as to the use of small trephines in the first instance, but having by their aid, or that of a gimlet, ascertained the presence of a cavity, we prefer making an opening sufficiently free to give exit to what-

^a The trephines recommended by Mr. Lee are about three-eighths of an inch in diameter.

ever matters may be contained, be they of a solid or a fluid nature.

Mr. Lee's Essays and his Lectures are clearly and well written; they emanate evidently from a man who has seen that of which he treats, and we can therefore recommend them to the notice of the profession.

Mikroskopische Anatomie, oder Gewebelehre des Menschen, von Dr. A. KÖLLIKER, Professor der Anatomie und Physiologie in Würzburg. Zweiter Band: Specielle Gewebelehre. Zweite Hälfte. 2. Abtheilung (Schluss). *Von den Harn- und Geschlechtsorganen, vom Gefässystem und den höhern Sinnesorganen*. Mit 140 Holzschnitten, ausgeführt von J. G. FLEGEL. Leipzig: Verlag von Wilhelm Engelmann. 1854.

Microscopic Anatomy; or Histology of Man. By Dr. A. KÖLLIKER, Professor of Anatomy and Physiology in Wurzburg. Second volume: Special Histology. Second half: Second Division (conclusion). *Of the Urinary and Sexual Organs, the Vascular System, and the higher Organs of Sense.* With 140 woodcuts, executed by J. G. FLEGEL. Leipsic: William Engelmann. 1854. 8vo, pp. 438.

IN a former number of our Journal^a we had occasion to notice the first half of the second volume of the above important work, treating of the skin, muscles, bones, and nerves, of the human body; as well as the first division of the second half, embracing the histology of the digestive and respiratory organs. The portion now before us is, in the ability with which the several subjects are treated of; in the acquaintance with the labours of others displayed in it; and in the amount and value of the contributions of the author himself to histological science contained in its pages, well calculated to maintain undiminished the justly merited and world-wide reputation of the writer: while in the beauty of its typography, and the excellence of the artistic illustrations, it is fully equal to the Parts which have preceded. The title, as we have quoted it, sufficiently explains the contents and arrangement of the present section of the work: we shall, therefore, proceed, without further preface, very briefly to allude to some of the points which may strike us, in passing through the volume, as being, from their practical impor-

^a Vol. xiii. of our present Series, p. 432.

tance, novelty, or interesting nature, worthy of more especial attention.

We shall first bring before the reader the author's description of some of the pathological changes to which the tubuli uriniferi are liable. These little vessels consist, throughout, essentially of the same elements, namely, a proper membrane (*membrana propria*), and a pavement epithelium. The former is a completely structureless, transparent, thin, but comparatively firm and elastic envelope, the normal thickness of which does not amount to more than from 0.0004 to 0.0008, but is often, under certain morbid conditions, increased to 0.001, and even 0.002 of a line, when it frequently exhibits on its inner surface very beautiful, closely-placed, delicate transverse striae. The epithelial cells, especially those of the cortical substance, often contain fat globules in considerable quantities, so that they might be mistaken for cells taken from a fatty liver, particularly as they are generally at the same time enlarged to 0.02 of a line. The normal measurements of the epithelial cells are stated by the author to be, in the convoluted tubuli, from 0.008 to 0.012 of a line in breadth, and from 0.004 to 0.005 in thickness, while in the straight tubuli they are only from 0.004 to 0.006 broad, by 0.004 in thickness. With the fat we also observe pigment granules (of the colouring matter of the urine?) in the convoluted and also in the straight tubuli; while, on the contrary, the concretions of urates and calcareous salts, which so often occur in the cavity of the tubes in vertebrate animals, have not as yet been with certainty demonstrated in the cells (in fishes Simon often found crystals in the renal cells). Bright yellow colloid-like masses are frequently discovered in the epithelial cells, which are then, for the most part, enlarged to form narrow cysts, from 0.05 to 0.072 of a line in length; and, finally bursting, discharge their colloid masses, which are likewise enlarged, causing the latter to be found free in the tubuli uriniferi, and also in the urine. A development of the epithelial cells to form other cysts, as assumed by J. Simon and Gildemeester^a, has not, the author states, as yet occurred to him; on the other hand, he observed, as Johnson has done, an evident degeneration of the convoluted tubuli in an atrophied kidney into closed cysts, taking place, to all appearance, by means of an areolar tissue, developed between the tubuli and strangulating them, which, while they retained the same structure as the tubuli, were in some parts of equal width, but in others were dilated to form vesicles of 0.1 of a

^a Tijdschr. d. Nederl. Maatsch., 1850.

line in magnitude. The Malpighian corpuscles may also be dilated to form cysts, in which, with a clear fluid, the atrophied corpuscle (glomerulus) is often to be seen attached to the wall of the cyst.

As abnormal contents of the tubuli uriniferi we observe:—
1. Blood, most frequently in the commencements of the convoluted tubes, particularly those of the surface, and often in such quantity that particles of blood, as large as the head of a pin, occur visible to the naked eye: these were formerly incorrectly looked upon as dilated Malpighian bodies. 2. Fibrine, in cylindrical masses, corresponding to the canal of the tubuli. 3. The above-mentioned colloid-like substance. 4. Concretions in the tubes of Bellini, consisting in the adult principally of carbonate and phosphate of lime (calcareous infarction), and in infants, of urates (uric acid infarction of Virchow), which latter give the pyramids a beautiful golden yellow colour, and occur, if not exclusively, at least generally, in children who have respiration (between the third and twentieth day). In Bright's disease, many of the tubuli, which, through the exudations that have taken place in them, have lost their epithelium, become in the latter stages of the affection atrophied, and finally wholly disappear; while groups of others, enlarged and filled with fatty exudations, appear in the form of little nodosities (the granulations of Christison).

In the section on urinary deposits we have the author's view of the nature of the pellicle, which has received the name of Kiestein. Professor Kölliker shows that, with the exception of occasional fat globules, the occurrence of which Lang has fully proved, normally excreted urine contains no morphological element. It is only casually that we find in it epithelial cells from the urinary passages, particularly the bladder and urethra; almost always we have mucus proceeding from the same parts, and forming a cloud or light sediment, with occasional mucus-corpuscles; finally, after seminal emission, we observe spermatozoa. In inflammations, hemorrhages, exudations, and the formation of fat in the kidneys, we discover pus, fat, and blood corpuscles, coagula of blood or fibrine, in the form of cylindrical plugs, casts, in fact, of the tubuli uriniferi, and epithelium, from these tubuli, either isolated or forming coherent strings or shields. All normal urine, not depositing a sediment, passes, if kept for some time at a medium temperature, under the influence of the mucus contained in it, into a state of acid fermentation, during which filamentary and fermentation fungi appear, and lactic or acetic acid is formed by the decomposition of the colouring matter of the urine, uric acid

being consequently set free. Sooner or later the acid disappears; the urine becomes ammoniacal and alkaline from decomposition of the urea, and perhaps, also, of the colouring matter, and large, colourless pyramidal prisms, or stellated needles of triple phosphate, soluble in acetic acid, make their appearance, which, mixed with numerous infusoria (vibriones and monads) give rise to a superficial pellicle, and, with granules of urate of ammonia and carbonate of lime, constitute a white sediment. In affections of the bladder the urine often passes immediately into alkalescence, with the formation of the crystals of triple phosphate, which latter also very frequently occur in the urine of pregnant women, and at first in the form of the pellicle, above described, were considered to be a peculiar substance (Kiesthēin).

The importance of these observations of Professor Kölliker was impressed upon us a few days ago by there being submitted to us the urine of an unmarried female, whose abdomen was enlarged, and in whom pregnancy was suspected, because a greasy-looking pellicle, supposed to be kiestein, was observed to form on the surface of the urine after a few days' repose. On closer inspection, sparkling crystals of triple phosphate were plainly visible to the naked eye; and on examination with the microscope, the pellicle was seen to consist of prisms of ammoniaco-magnesian phosphate, surrounded with an enormous number of vibriones, among which numerous monads were moving about with much activity. It is needless to add, that there is no necessary connexion between such a condition of the urine and pregnancy, nor did the latter state in this particular instance exist, the enlargement of the abdomen having been found to depend upon ovarian disease.

The author makes some remarks in reference to the occasional occurrence in the breasts of infants of a small quantity of a fluid resembling milk both in its external and microscopic character, to which we may briefly allude. The origin of this fluid is probably connected, he thinks, with the formation of the glandular ducts, just as he supposes that of the colostrum to be connected with the maturity and final formation of cavities (follicles and ducts) in the more central portions of the gland. The morphological elements of the latter fluid he supposes to be nothing but the inner cells of the last milk follicles and lactiferous tubes developed during pregnancy, filled with fat; and he remarks that the process which we find to take place at the period of the first lactation is not confined to that time, but may be observed during the entire development of the gland, appearing energetically exactly when this organ

makes greater degrees of progress. Such a period, he continues, is that immediately after birth, and in the first year of life. It has, he adds, long been known that the mammary glands of children, of both sexes, often become remarkably swollen, and on pressure discharge a milky fluid, which is also frequently to be found, in tolerably large quantities, on making a section of the gland in the dead body.

The microscopic investigations of several observers show that this infant milk has sometimes the properties of true milk, at others, those of colostrum; and it might hence be inferred that in this instance a real secretion, whether normal or pathological, takes place. "But, in my opinion," continues Professor Kölliker, "the entire phenomena may be more simply referred to the more rapid progress of the development of the gland after birth; and I think we may venture to assume, that the appearance of milk in this case is connected with a formation of fat in the central cells of the still solid parts of the gland, by which these latter first acquire their cavities. Consequently, we should here have to do with a physiological process, which, on the one hand, frequently appears with but slight intensity, and then passes over unobserved, while, on the other, it may lead to congestions and inflammations of the gland, and then seems to be a purely pathological occurrence, like the formation of milk in various diseases of the breast and in uterine affections.

"As in infants and children, so also at the period of puberty, when the gland likewise makes considerable progress in development, a milky fluid, with colostric bodies, may be found in the lactiferous ducts, and I therefore think that my view of its origin is tolerably well borne out. I do not, however, mean to say that an actual secretion does not coincide with the development of the glandular ducts; I am of opinion that this in fact occurs in children, and in women pregnant for the first time. This secretion would then, in a woman pregnant for the second time, by itself form the colostrum, as it is scarcely to be supposed that new lactiferous ducts are formed in every pregnancy."

The writer of this notice had some years ago an opportunity of examining about half a fluid drachm of a milky fluid taken from the breast of a male child, three weeks old, and furnished to him by Dr. Battersby; it was alkaline, threw up a cream, presented under the microscope normal milk globules, of various sizes, on the whole smaller than those of the adult female; a very few colostric bodies, with some epithelium, and some masses of dark colouring matter, were also observed. Water

of caustic potash did not render the fluid viscid, nor did the milk coagulate when boiled. Dr. Battersby mentioned this case at a meeting of the Surgical Society of Ireland, on which occasion he expressed his regret that, from the smallness of the quantity supplied, and the fact of the experimenter's attention having been chiefly directed towards ascertaining whether the colostric bodies, seen under the microscope, were sufficient in amount to give the specimen the chemical properties of colostrum or not, the presence of casein, which would have fully established the identity of the fluid with woman's milk, had not been determined. This deficiency has since been amply supplied. M. Natalis Guillot observed milk taken from the breasts of thirty-nine male and thirty-four female infants; he considers its secretion to be a normal function, as it only occurs in healthy children. The fluid was white, neutral or alkaline, and became acid on exposure to the air; it separated into a serous and a creamy part, and possessed the same composition as the milk of the adult female, casein, sugar, and fat, having been found in it. The milk, he adds, is a perfect one^a.

Dr. Schlossberger examined "a specimen of the white milky fluid, often secreted by the mammary glands of new-born infants, of both sexes, obtained from a boy, who yielded about a drachm during the course of a few days. The fluid had the appearance of milk which had been watered; it reacted alkaline, and exhibited under the microscope the normal milk corpuscles. It reacted strongly upon sugar, but did not coagulate by heat; it did so, however, upon the addition of acids and rennet. It consisted, in 100 parts, of water, 96.75; fat, 0.82; ashes, 0.05; casein, sugar, and extractive matter, 2.38. It was, in fact, a very thin, but truly chemically constituted milk"^b.

From the results of the foregoing examination there can, we think, be no doubt that the fluid in question is, in great part at least, the product of an actual secretion by the mammary gland of the infant.

We should gladly draw more largely from the pages of Professor Kölliker's valuable book; but to do so fully to our satisfaction would require a complete analysis of the volume, an impossibility in our pages. We may again return to it, and in

^a *Gazette Médicale de Paris*, 29th October, 1853, p. 686; also *Archives Générales de Médecine*, November, 1853, p. 513.

^b *Würtemb. Corr. Bl.*, 1853; and *Medical Times and Gazette*, November 19, 1853, p. 537.

the meantime most strongly recommend all of our readers engaged in microscopical investigations to refer to the original, which will afford them a rich mine of information in their pursuits.

Practical Observations on Mental and Nervous Disorders. By ALFRED BEAUMONT MADDOCK, M. D. &c. London: Simpkin, Marshall, & Co. 1854. 8vo, pp. 232.

THERE are books we read for profit, books we read for pleasure, and books from the perusal of which, while deriving the one, we also experience the other. A book, to be of value as a scientific work, to occupy an honourable and lasting position in the archives of that temple wherein are registered the votive offerings of truth-loving men, requires to be based on a surer foundation than that of mere rhetorical display, which, however indicative of a generous imagination, cannot be received as evidence of mental vigour. Far be it from us to insinuate that "refined and profound thought" may not, as Cicero has observed, be expressed in "soft transparent diction." We rejoice to say that many of our most deservedly esteemed scientific works are as equally distinguished for purity of style and harmony of expression, as for correctness of description and justness of inference. It is fitting that it should be so, when Philosophy and Medicine, joining hand with their fairer sisters, Eloquence and Learning, visit their native mount together, to offer tribute at their patron shrine. Great thoughts have their natural garments distinguished rather for their quality of texture than richness of colour,—their aptitude of design than elaboracy of construction. Philosophers should ever eschew foppery, as seldom failing to detract from their natural dignity. We wish to impress this fact, as we are each day convinced that sentimentalism is not confined alone to romantic girls or aspiring youths. Erudite physicians join in their childish games, and send forth Medicine with her sombre form disguised in all the flimsy whimsicalities of modern Bloomerism.

We know of no reason why physicians should not cultivate their tastes for polite literature, and aspire to the highest excellence in all those refinements of intellectual life, for which the peculiar nature of their studies and daily exercises so pre-eminently qualify them. The great scientific and literary institutions of our country are proud to number amongst their most distinguished and useful members, individuals who, from

the anxieties and responsibilities of practice, snatch a few moments for such relaxation as finely-wrought minds alone can indulge in. There is a suitable time and occasion for all things! What would be thought if some one physician, more aspiring than his fellows, published his clinical lectures in rhyme? We leave the question to the consideration of our readers. Stranger matters have occurred ere now. Despite the warnings of Coleman and his detail of the sad consequences following the directions,—

“When taken
To be well shaken,”

we do not altogether despair of such a treat, for, judging from the introductory chapters of the work before us, and contrasting them with others we have recently been favoured with, it appears that an extensive acquaintance with the poets of the day forms no inconsiderable item in the requisite qualifications for modern medical authorship. A question naturally arises,—with what objects are professional works written? Is it to afford to those engaged in similar exercises the well-considered results of careful observation, which may in the hour of danger guide the doubting, and impart additional confidence to the anxious labourer in the cause of suffering man? If so, away with those embellishments which mock the seriousness of such deliberations. Does an author desire his work should outlive his memory, and entitle him to be marked amongst those who deserve well of his fellows? Let its eloquence rest in the force of its reasoning, its romance consist in the identity of its descriptions with the mysterious operations of life. Be this as it may, the fountain of medical science must be preserved both pure and free. Its waters are life-giving streams, be ours the care they flow undisturbed, that truth be not disguised in its progress, or disfigured in its course.

We do not wish to speak disparagingly of the volume before us because its author has therein dealt forth poetic quotations with a right liberal hand; though, if our memory serves us right, the Venusian bard long since wrote,—

“Quod medicorum est
Promittunt medici.”

Had he lived in the present day, to define the foregoing might prove a matter of no small difficulty. We confess ourselves as being but indifferently calculated to estimate the scientific application of those “elegant extracts,” nor can we, at the risk of being considered a copyist of Dr. Maddock, avoid, as

we peruse them, recalling the personal experience of Tom Moore respecting their source and utility:—

“ Read at a stall, for oft one pops
On something at those stalls and shops,
Which does to quote, and gives one’s book
A classical and knowing look.”

Dr. Maddock informs us in his preface that, in addition to the ample opportunities which public appointments have afforded him, much experience among private patients has also furnished materials for the composition of his present work; notwithstanding which he writes:—

“ To either novelty or depth of research, the author, in the composition of these pages, makes no pretence; for he is thoroughly aware that many of the deductions and inferences herein contained were well known to the ancient writers, though of late too much disregarded; but he may affirm that they are the result of reflection and considerable experience. The work is submitted rather as ‘ materials for thinking,’ and as forming a *point d’appui*, as it were, for further extension by abler or more leisurely hands, than offered as a finished production.”

Certainly the latter part of this admission sounds strangely to our ears, more particularly as we have so recently noticed in our pages many “finished” volumes from the pens of such men as Stokes and Todd, who, amid the toils and anxieties of the largest practice, still found time to perfect their labours in the cause of science. We cannot regard this statement otherwise than one savouring strongly of the “pride which apes humility,” inasmuch as the term “more leisurely” delicately removes any difficulty which the non-discovery of “abler hands” might originate. We have no wish, in the commencement of our review, to question the author’s justness of opinion, or discriminating appreciation of his own work, respecting which he is so pre-eminently qualified to judge; especially as its careful perusal has fully satisfied us of both its candour and truth. Such being conceded, it may not be unreasonable to ask, with what object has another been added to the list of *ordinary* works on a subject to which so much close study and *extraordinary* attention has been, and now is, being bestowed? By what standard are we to estimate the merits or value of a new work? whether by the relation of its contents to our admitted knowledge on those subjects of which it professes to treat; or according to the value we attach to the opinions of its author, from our acquaintance with the opportunities he has enjoyed for perfecting his judgment? By neither of these

criteria can we for the future be guided, since it matters not what their opportunities be; though feeble men could not write great books, able men may write unfinished ones, so that the want of ability on the part of one, and leisure on the part of another, so equalizes their labours, that their works are thereby closely assimilated to the same standard.

The varied observations contained in the first three chapters of this "new work on affections of the nervous system" are certainly more distinguished for their florid style than original application; for their musical sound rather than their scientific matter. Old truths are re-stated; old authors again quoted. The apposite remarks of "that elegant Roman poet, Horace," are not forgotten, who, could he be conscious of the estimation thereby expressed, we doubt not, would feel both flattered and proud, notwithstanding the extraordinary liberty subsequently taken in applying his eulogy of Pyrrha, as expressed in the phrase, *simplex munditiis*, to a patient labouring under a disease of the skin, and translating it,—"elegant by cleanliness,"—at which wide range we have been not a little amused. The first three chapters are, however, but the prelude to the more important matter, inasmuch as they conclude with a classification of the various nervous and sympathetic affections most frequently met with in practice. This classification is as follows:—

1. Affections of the brain and nervous system, associated with morbid states of digestion and assimilation.
2. Affections of the brain and nervous system, connected with derangement of the circulating and respiratory organs.
3. Sympathies of the brain with the function of locomotion.
4. Sympathies of the brain with the reproductive and urinary organs, and the functions of sense and sensibility.

Dr. Maddock purposes to consider each of those classes in more particular detail, and we accordingly accompany him in his progress.

The fourth chapter of this work, constituting the most extensive as well as most important portion of the whole, is occupied by the consideration of the first of these divisions.

We pass Dr. Maddock's very meagre observations respecting the sympathetic system, in which the well-known capability of visceral irritation, through reflex nervous action, to induce morbid and unnatural cerebral excitement, is set forth as the rational foundation on which the treatment of such excitement, to be successful, should be based. This we conceive to be a matter of such ordinary experience, that any further

remarks in reference to it would be superfluous. Our author, however, thinks otherwise, for he thus writes:—

“ As the medical officer, for some years, of an extensive lunatic establishment, I have necessarily enjoyed great opportunities in the observation and treatment of diseases of the brain, in all their numerous and protean forms; and it is one of the chief objects of this work to show, that they have not that indelible organic character which has generally been assigned to them, but that they are chiefly dependent upon a deficient nervous energy, and more especially connected with the digestive, assimilating, and excretive organs.”

We would ask Dr. Maddock for what class of readers is this work designed. If for the public, we protest against his propagating so unfounded an assertion, as may be inferred from his declaration that indelible organic characteristics have been assigned to mental diseases by those whose opinions are worth canvassing. If it be intended for the profession, we cannot but admire the coolness and self-possession evinced by its author in undertaking to prove that, of which we are satisfied the veriest tyro in psychological investigations does not entertain the vestige of a doubt.

We have carefully perused this chapter, abounding with quotations from “illustrious” and “classic” “authors,” “noble poets,” “quaint old writers,” “great moral philosophers,” “great lexicographers,” “acute,” “sagacious,” “intelligent” physicians, and “accurate anatomists.” We have been impressed with Dr. Maddock’s intimacy with “Lord Bacon, who was a physician as well as a philosopher, in times of old;” with “the witty Lord Chesterfield,” and with “the words of immortal bards.” We have had our recollections of the poets, ancient and modern, amended and improved, but we have *not* had one iota of useful knowledge added to that which other observers had, with honest seriousness and truthful earnestness, previously, fully and fairly set forward. We do not by this mean to convey, that those many desperate cases which recovered with railway speed were not treated well and judiciously. In stating thus much, and allowing that average ability was manifested in their management, we concede all that critical justice will permit; for, while seeking in vain amongst them for the promised *point d’appui*, we have felt humiliated that their details were not more carefully revised previous to publication. We extract the following. Referring to a gentleman’s removal to the author’s asylum, we read:—

“ During the journey he was extremely dejected, continually

exhibiting fears that I was 'taking him to a gaol,' and that he had 'lost his commission,' &c. Finding upon his arrival at my establishment that his surmises about a 'gaol' were unfounded," &c.

Again, in another example:—

" This case (which is well known to Dr. Hayman, of West Malling, and to Mr. Saunders, surgeon, of Tenterden) had been rejected at Bethlem Hospital as being incurable."

Again:—

" Having a large family, and a sick child, it would be very inconvenient for me to leave home, and therefore hope that you will be enabled to satisfactorily treat my case by letter. I am encouraged in this hope by finding that it was by epistolary correspondence that you restored Mrs. C. from a state of miserable mental despondency, and bodily suffering, to perfect health. . . . I say *ameliorated*, for I despair of being cured, having been so long under treatment to no purpose."

This patient is reported to write thus at the end of seven weeks:—

" I have continued to improve daily since I last wrote, and am in excellent spirits. . . . When I bring back to my mind the horrors I used to endure, I cannot sufficiently thank you for your kind and successful efforts to restore me; and I also feel grateful to my dear friend in having so fortunately recommended me to seek your aid."

Dr. Maddock, reporting a case of hypochondriasis, and detailing the mental and bodily suffering of the patient, writes:—

" He further added, that the former had been maintained and aggravated by the unfeeling manner in which his family, his friends, and even his medical attendant, had derided and ridiculed his complaints."

Another patient, having detailed his extreme case, adds:—

" It appears to me that I cannot do better than place myself under your treatment, seeing how successful you were in the case of my dear niece; we all feel that we can never be sufficiently grateful to you for her recovery."

" An instance of this kind occurred to me about fourteen years ago, in a person (known to Mr. Karstadt, of the General Post Office)."

We might extend this list of quotations by many others of a similar class. Our readers are, we doubt not, as weary of them as ourselves. Their parallel can only be found in those fulsome and contemptible puffs which are set forth by many,

and deservedly regarded as being equally derogatory to science as they are injurious to that high character of the medical profession we are each called on to sustain. We regret that any work emanating from a gentleman of Dr. Maddock's apparent position should abound with so many just grounds for censure. Writings of this nature we shall always consider it a duty to publicly censure, and energetically condemn, even though flashes of genius illumine their pages: much more when commonplace truths are thus submitted to the profession and the public, their declared philanthropic origin shall in no wise lessen the offence.

A Disquisition on Certain Parts and Properties of the Blood.

By DAVID TOD, M. R. C. S. London: Churchill. 1854.
8vo, pp. 263, with illustrative woodcuts.

WE have a tendency, it may be an idiosyncracy, to judge of the general style of a book by the character of the preface. This estimate is not influenced by the length or brevity of the introduction, but rather by the presence or absence of those ideas which should constitute the prelude to the enunciations which are to follow. It may possess some features of novelty to those uninitiated in the mysterious science of literary anatomy to learn the usual sequence adopted by authors in the construction of preface and volume. The latter is invariably completed before the former is commenced,—the prefatory introduction being composed as a text to the volume, or a didactic expression of its contents, written while the author's mind is tinged with those ideas which he has portrayed at large in his work. There is one character, however, which we esteem to be essential to its utility, namely, that it should be clear and intelligible to all possessing ordinary understanding, for such we assume to be the standard of psychical endowment that nature has allotted to the majority of our species. There are certainly a few exceptional cases occurring in every age, where nature has with an unmeasured prodigality invested men with the most exalted development of intellectual attributes, evidenced by peculiarities so striking, but at the same time so dark and obscure in their sources, that to avoid a difficulty in the application of a suitable expression, we select one which cannot be defined, naming the gifted individual *a genius*. But notwithstanding the inspiration of this peculiar gift, it frequently occurs that those who possess it in reality and in fact, as well as those conceiving that they are thus favoured, are so

obscure, not only in their writings, but even in their conversation, as to be perfectly unintelligible to ordinary mortals. It is for this reason that it were better for such men to indulge in their visionary speculations, and exercise their peculiar diction in the recesses of solitude, than seek to obtrude their *ideals* on a practical and utilitarian world, with objects above the influence and beyond the power of a dreaming system of philosophy, created by a weak indulgence in those uncontrolled flights of fanciful imagination, which terminate eventually in the perversion of all rational and useful ideas. But if it is one of the necessities attached to our social condition, that these literary manifestations of genius must occasionally appear to strike with wonder, surprise, and awe, those inferior mortals who are doomed only to the possession of ordinary capabilities, it is well that the cold, stern, and unpoetic mind of the critic guides the hand, which, wielding its disenchanting wand, shivers the gilded palaces and temples that the visionary has created, and strikes terror and devastation throughout the regions of his pictured dreams.

We regret that so unpleasing a task has devolved on us in the present instance; but whilst expressing an indisposition to condemn the labours of others, we will not express a single opinion without a just cause being assigned, and a valid reason given for our condemnation. Mr. Tod states in his preface, that he began his inquiries—

“ By investigating the process of germination in the various kinds of vegetable seeds, and of the hatching of the egg of the common fowl, and by ascending to the changes which take place in the various periods of respiratory life, to endeavour to discover, if possible, the laws which govern the economy of man. Before proceeding far with these inquiries, the subject became deeply interesting; for the further the economy of nature was examined, the more imperfectly her laws seemed to be understood in very many of her daily operations. *The most opposite phenomena were unfolded in the most perfect manner by apparently the same means, and the development of every vital entity became associated with its most remote periods, and had a direct relation to general laws.*”

We are utterly at a loss to understand what Mr. Tod can mean by these expressions, and although he may have fully understood what he wished to convey, yet to us they seem merely a number of words void of a single intelligible idea.

The volume consists of six chapters, but we will not subject our readers to the infliction of a critical review of each, preferring rather to select a few striking passages from the work sufficient to determine its value; whilst we add, for the sake of

explanation, a brief, but pointed commentary, to prove the justice of our opinions and eventual conclusions with respect to the position which this literary effort should occupy in the physiological annals of the nineteenth century.

The first chapter treats of the blood discs, including their physical and vital properties. The author starting with the assumption of a new designation—Hæmatozoa,—conceives them to be animalcules, possessing inherent motile power and evident electrical attributes; but unfortunately the proofs on which these assertions are based seem to have lapsed from the author's memory, for on no other grounds can we account for their omission,—the only attempt to support an opinion so novel in its nature, and startling in its assumed results, being the observations of Mr. Tod with the microscope. He states—

“That in observing the circulation in the capillaries, he has seen the blood discs (hæmatozoa) assuming a spindle shape;” and again:—“Twice I have seen the smallest extremity of one of these erratic bodies move like the tail of a fish swimming; and once I saw, when one of these bodies was turning over slowly, and apparently changing its form, in the colourless liquor sanguinis, *shades of convoluted structures*, like intestines, where nothing but a limpid fluid was visible, whilst the body retained the discoid form.”

Who that has used a microscope, even occasionally, is not aware of the change occurring in the shape of the corpuscles? Not one, we firmly believe; although they may be unconscious that Mr. Gulliver has specially drawn attention to the fact. That it is the result of a physical cause, and in nowise an evidence of a vital characteristic, is rendered fully apparent by continuing the observation on the corpuscles which have suffered change. They will be seen in every instance to return to their former circular figure when the compressing agency is removed, and this very resiliency is taken as a proof of the elastic nature of their globuline element. If Mr. Tod will subject the web of a frog's foot to the stimulating influence of a strong solution of chloride of sodium, and then steadily watch the discs becoming aggregated, crushed, and crowded, we promise that he will see far greater changes than those which he records, and almost predict that a supplement to the present work will eventuate from this simple experiment.

In pages 26, 27, 28, the author enunciates one of the most startling opinions that the most vivid imagination could have conceived. The celebrated Ruysch, who achieved so much by his successful injection of the structures of the human body, believed all glands to consist of vessels, variously modified, or,

in other words, that the secerning capillaries and efferent ducts were continuous. Now the seminiferous tubules are about four times greater in diameter than the capillaries, which would seem to preclude the possibility of an anastomotic union, and observation has proved that both the vessels and ducts are perfectly closed; yet, notwithstanding these obvious circumstances, Mr. Tod states seriously, that the blood discs are changed into spermatozoa. He says:—

“ These observations lead to the conclusion, that the hæmatozoa and spermatozoa are merely the primary and secondary stages of the same being;” and again: “ That in this condition, hæmatozoa are attracted by and conveyed to the seminal vesicles from the spermatic arteries, and in their passage changed into spermatozoa.”

At one fell swoop the whole theory of cellular secretion is destroyed, and the labours of Schwann, Schleiden, Kölliker, and Goodsir, rendered nugatory; Wagner, Müller, and Henle, in describing the absolute formation of spermatophori with their included spermatozoa, must indeed have indulged their imaginations more than exercised their visual organs if the metamorphosis of the author is admitted to be correct. Now what are his proofs to induce physiologists to recognise his views? These we propose briefly to examine: first as to the blood discs escaping into the seminal vesicles, and in their passage being converted into spermatozoa. If Mr. Tod will examine the straw-coloured fluid of the vesiculae with a good microscope, it will perhaps astonish him to discover that the presence of spermatozoa constitutes the exception, and not the rule. We have never seen a single trace of them in numerous examinations of the fluid; this convoluted tube representing a vesicle is not a receptacle for semen, as Hunter long since explained, and the anatomy of the generative apparatus in the elephant fully proves. It is simply a separate secreting surface, ancillary but not essential to the elimination of the fluid elements of the semen.

The second fact adduced to justify the supposition of metamorphosis is, that the discs and spermatozoa are of the same figure in the human subject, both oval or elliptical. We were not aware that the blood discs were oval in man, having always seen them when freely passing through their natural channels of a distinctly circular figure, an opinion confirmatory of that of Gulliver, Müller, Hewson, Jones, and others. How Mr. Tod could have made this unfortunate lapse seems almost unaccountable, unless that his observations were made on the blood of the members of the class Camelidæ, which are the

only mammals possessing oval discs, and in this respect resembling reptiles, birds, and fishes.

The third proof amounts to this, and no more: that because physiologists have not seen a blood disc collect all its energies for a vigorous effort, and rush incontinently against the vascular walls which imprison its unwilling spirit, and, failing in the attempt, retire defeated and discomfited, it is just, in the absence of the negative, to assume the affirmative proposition. Here is the extract, in order that we may avoid the charge of misrepresentation:—

“ To these objections I may reply, that although no communication has been or can be traced between the spermatic arteries and seminal tubes, that circumstance does not prove its non-existence.”

The second section treats of the blood as a *conditional compound*, implying that certain relative and uniform connexions subsist between its different elements constituting a state of integrity of the mass. We are tempted to indulge in an extract from the commencement of this section, which will indicate the nature of that which follows in the subsequent pages. He says:—

“ It is necessary to notice the different constituents of the blood, as this has been done by others; now it is requisite to compare the different constituents of blood and chyle with one another, for whatever exists in blood, and not in chyle, must be due to the functions of the hæmatozoa, and to its electrolysis in the lungs and peripheral vessels, as will be shown hereafter. It is not necessary here to investigate the electrical condition of the blood constituents either in their normal or abnormal state; for every constituent of the blood is a compound, of which the elements are arranged and held together in definite proportions by a certain amount of cohesive force, and all are bound up with and accompanied by definite antagonistic electrical conditions. It may, however, be observed that every constituent of the blood must be changed and prepared for its ultimate uses before any portion of it passes from the main current into any exhaling and absorbing vessels; and every one of these vessels must attract and remove matter in accordance with its special function. Therefore, in every abstraction from the blood, the abstracted matter must be *anion*, and the blood *cation*. This seems to be the case with the blood and its vessels in all parts of the body. At the electrodes of the vascular circuit, where the blood undergoes general changes, it becomes *cation* the moment it commences flowing through the capillary extremities of the arteries, and *anion* the instant it enters the anastomosing capillaries of the veins, and in this condition it flows as a whole to the heart, where the same phenomena recur. In every diastole and systole of the auricles and ventricles, each cavity

is alternately *anelectrode* and *cathelectrode*, and the blood alternately *anion* and *cation*. In both arteries and veins, the blood, notwithstanding the difference in its colour, capacity for caloric, temperature, and properties, is therefore *anion* in its vessels, until it reaches their respective termini or the mouth of an absorbing vessel, where it becomes *cation* for the support of the vital functions."

We confess ourselves utterly unable to give any adequate explanation of a theory so ingenious and novel, and, therefore, prefer presenting this extract to our readers, devoid of any commentary, which must necessarily fall far short of the merits implied by so beautiful an exposition of the electrical attributes of the blood in relation to the vital functions.

The second Chapter treats of the colour of the blood, the author detailing the composition of light and colours, with some remarks as to the psychical appreciation of their manifestations; and in Chapter III. the actions of the blood are discussed at large. These questions, together with the succeeding chapters, we must leave untouched, and pass rapidly to Mr. Tod's views of the "etiology and pathology of the blood." Taking into consideration the labours of Andral and Gavarret, Rees, and others, on the subject of hematopathology, we were prepared to anticipate at least a good digest of the opinions of previous writers, with the author's commentaries, and, perhaps, additions to our previous knowledge on the subject; but even here we were doomed to suffer a severe disappointment, and compelled to peruse a collection of irrational and delusive hypotheses totally foreign to the subject, and only calculated to lead to the most erroneous conclusions.

Having exhausted his favourite theme of the influence of heat in modifying the blood and inducing disease, he next indulges in some startling statements in reference to therapeutics; ridicules the influence of the secale cornutum over the gravid uterus; denies the utility of cod-liver oil, and recommends, as a substitute, fat beef and mutton, grounding his objection to the latter medicine on the fact that *cases of phthisis did absolutely prove fatal*, notwithstanding the exhibition of the oil even in large quantities.

Before we conclude our notice of this work we are anxious to select a case or two, in order that our readers may form an idea of the author's mode of making a record public. At page 261 we find the following:—

"Charlotte Hassell, aged fourteen years, residing at 5, Pitt-street, Charlotte-street, Fitzroy-square, was placed under my care on the 25th of May, 1852. About six years before this period she was observed to start and jump whenever she went to bed, and continued

to do so occasionally until she fell asleep. Continued in this state about a month, and then the disease began to appear frequently during the day. About five months after the first appearance of the malady she became a patient to the Dispensary in King-street, Golden-square, under Dr. B.; continued under his treatment about eight months, but obtained no relief. A lapse of twelve months then occurred without applying for further advice; but becoming a great deal worse, she was made an outdoor patient to University College Hospital, under Mr. Q. Continued attending the hospital nearly one year, and regularly took one kind of medicine, which consisted of a red powder, but could not tell its name. It made her motions very black, but gave her no relief. She then ceased attending the hospital, and applied for no further advice for two years, as her father considered the disease to be incurable. At the expiration of that time she became very ill, and was made a patient to the North London Dispensary, New-road, St. Pancras, under Dr. A. Continued attending the physician for three months; but getting worse, and rapidly losing flesh, she ceased attending any longer, and remained at home, without having further advice, for several months. On becoming alarmingly ill, she was placed under the care of Dr. T., of 51, Charlotte-street, Fitzroy-square: obtained no relief, and discontinued taking any medicine for some time. At last her head became covered with sores, and a mass of animated nature. An order was procured to get her into the workhouse, there to end her days. This brought her under my notice. She was then in a deplorable condition, scarcely able to stand without support; could not prevent her head from being drawn backwards every two or three seconds, nor her body from being moved in various positions; and in attempting to walk, her legs were forcibly drawn up every two or three seconds, as if to kick something behind her. As the disease was evidently chorea Sancti Viti, and feeling an interest in the case, I declined sending her to the workhouse infirmary, and placed her under treatment. She was put at once under a course of emetics. Three days afterwards she was able to walk to my house without assistance; all the vermin in her head had disappeared under the application of the usual remedy. She regularly visited me once a week until July 14th, when her general health was so much improved that her father considered her cured. On January 15th, 1853, I visited her, and perceived that the disease was not eradicated; but as it did not prevent her from attending to work, nor give her any annoyance, and as her general health was good, the father did not deem it necessary to apply to me again."

We wish to draw especial attention to this fact, that Dr. B. failed; Mr. Q. was unsuccessful; Dr. A. unfortunate; and Dr. T. useless: yet the moment our accomplished author took up the case, after this successive series of failures, the girl at once improved, and in *three days* was able to walk without assistance. What a pity that she had not the good fortune to have applied

to Dr. Tod at once, and then she would have escaped so much suffering, and her four charitable doctors Mr. Tod's censure, which is implied, if not absolutely stated.

From the general tenor of our review it may be inferred that we entertain an unfavourable opinion of the author's capacity, but such is far from being the case. There are few pages of the book which do not evidence the close application of a vigorous mind and the possession of a large amount of general information. We regret, therefore, that our duty coerces us to condemn where our desire would lead us to the adoption of a favourable opinion of a book which bears the stamp of severe and protracted labour. Let us advise Mr. Tod, in the first instance, to assume right premises, to divest his mind of all preconceived opinions, to avoid shadowy hypotheses, to treat of reasonable facts, and to give up his well-marked predilections for quackery; and we have no doubt that when we again have to notice a work emanating from him, our verdict will be more than favourable, and creditable to the science which it may conduce to advance.

Mémoire sur les Luxations des Cartilages Costaux. Par LOUIS
SAUREL, D. M. M., &c. Montpellier: Patras. 1854. 8vo.
pp. 46.

AMONG the injuries to which the body is liable, some excite our attention from their extreme gravity, as fractures of the cranium or pelvic bones; others, as dislocation of the humerus, from their comparative frequency and the necessity of prompt treatment; and as this must depend on the utmost accuracy of diagnosis, we are careful to study all the symptoms of the accident, as well as those of all the other injuries of the joint, that might be mistaken for it. Some few again are recommended to our notice by their rarity; of this class is the dislocation which has engaged the attention of M. Saurel in the memoir before us. Luxation of the costal cartilages is seldom met with, and when it is, the injury of internal organs, the lungs, liver, or heart, which result at the same time from the extreme violence which has caused it, often entirely mask the less important lesion. Few cases had been previously related by authors; Garengot, Martin of Bourdeaux, Boyer, and M. Leger, have given observations more or less perfect of dislocation of the costal cartilages known to themselves. Some difference of opinion has existed as to whether the displacement of the costal cartilage from the rib is not rather a fracture than

a true dislocation. The author, however, relates three cases where it was supposed to exist, by MM. Bouisson, De Kempe, Benoit, and two by himself; at the same time he expresses his belief, that they were more likely to be fractures or solutions of continuity in the cartilage itself, than displacement of the end of the cartilage from its articulating cavity. He was confirmed in this opinion by experiments which he made on the dead subject. From these experiments, and careful deductions from the cases which he relates at length, M. Saurel gives the following *résumé* of the examples of the accident:—

“ The deduction may fairly be drawn from the facts which I have adduced, that considerable violence is necessary to separate the ribs from their cartilages; that this separation is more like a rupture than a dislocation; that a true fracture may exist without our being able to distinguish it, during life, from what is called dislocation: finally, that even in cases where neither mobility nor displacement are observable, a rupture of the costal arch may exist in the exact spot where the cartilage is united to the rib.

“ Whatever may be the true nature of this lesion, to which we attach the name of chondro-costal dislocation, it is important to study the causes which give rise to it, the symptoms by which we can recognise it, and the means of treatment best adapted for it.

“ With respect to age and sex we have nothing to say. The subjects of the former observations that we have related had reached adult age; the one under my care was even above 50. It may, however, be believed, that youth and adult age are more favourable to the production of this displacement than old age, for in the last, fracture is easier than dislocation.

“ In the cases of MM. Bouisson and De Kempe, we see that the displacement was situated on the fourth and fifth ribs; in the two others, on the contrary, the ninth rib was its seat.

“ It was not always produced by the same cause; direct external violence seems oftenest to have given rise to it; this was seen in the first and second cases. Sometimes it was produced by *contre-coup*, when strong pressure was exerted over the free end of the cartilages, as in the third case. Finally, sometimes, as the fourth case proves, muscular action may be powerful enough to separate violently the bony rib from its cartilage. The comparison of the four facts already related seems to prove, that the dislocation of the sternal ribs would take place most frequently by direct violence; while indirect violence and muscular contraction would more readily produce displacement of the asternal ribs. The want of flesh,

and an energetic dilatation of the thorax at the instant of the accident, are, setting aside other organic or constitutional predispositions with which we have no reason to occupy ourselves, circumstances which appear favourable to the displacement in question."

The symptoms which we find specified in the observations as yet known are the following: violent pain, sometimes followed by insensibility, and accompanied, in certain cases, by a feeling of something having given way; a sense of oppression, painful respiration, which increases the suffering at the seat of injury; externally, more or less ecchymosis, so much so as to mask the injury; more or less swelling according to the time we are called in. In examining the seat of the lesion, we recognise the existence of a more or less marked depression at the costal or cartilaginous extremity. According to Sir A. Cooper, it is the cartilage which makes the external projection; whereas in the observations of MM. Bouisson, De Kempe, and Benoit, this projection was manifestly formed by the costal extremity; the depression corresponded, therefore, to the cartilage. In the case observed by the author, this important sign was wanting. When one felt the extremity of the rib no inequality was found to exist, and the separation was even. Inspiratory movements have generally the effect of making the cartilage ascend to its place, and reduce the luxation, while it is reproduced during expiration. Pressure exercised with the fingers on the dislocated end can, in the absence of other signs that we have just indicated, cause the dislocation to be ascertained. During the displacement thus produced, a particular noise is heard which the patient himself is sensible of. These manœuvres are always painful.

"These are the principal characteristics by which we recognise the chondro-costal dislocation; in many cases they will be sufficient to arrive at an exact diagnosis; in others, on the contrary, they will only furnish a sufficient degree of certitude. The other lesions with which we may confound it are fractures of the cartilages and ribs. Without doubt, in thin subjects, and in the sternal ribs, the projection forward by the chondro-costal articulation is sufficient to avoid any mistake; but in very fat subjects, where the dislocation is seated in the false ribs, and in the case where a considerable swelling has taken place immediately after the accident, it may be very difficult, if not impossible, to recognise the exact lesion we have to deal with. If the fracture of the cartilage is seated in a point very near the bony rib, how are we to distinguish this lesion from true dislocation? The displacement will be the same, and it

will be accompanied by exactly the same symptoms. The difficulty will not be less great if the costal extremity is broken in its thickness, as is shown in one of our experiments; in this case, moreover, all the symptoms will be those of a dislocation; especially if the chondro-costal periosteum is not broken, because then, the mobility being feeble, no crepitation will be produced. The error of diagnosis, however nearly inevitable in such cases, will be of no importance, since the treatment of these different lesions is always the same. The prognosis of the chondro-costal dislocation is not serious; this lesion is only so in cases when the wounding cause has borne its action on the organs contained in the thoracic cavity, or when the displacement affects many ribs at once. In such cases the injury may be mortal."

"With respect to the treatment called for by a chondro-costal dislocation, it is very simple. If the contusion is severe, if there is much difficulty in breathing, if there are much swelling and ecchymosis, we should have recourse to bleeding, general and local, and to soothing applications. The reduction of the displacement ought to be effected at once; it is generally easy. During inspiration the costal cartilage takes its proper place; we must profit by this circumstance to fix it there, and to oppose its consecutive displacement by means of a body bandage applied round the chest. If the reduction of the displacement does not take place naturally, it may be accomplished by pressure exercised on the end of the rib, and making the patient draw deep inspirations. If the cartilage has much tendency to displacement we ought, at the same time that we render the chest immovable, apply compresses graduated over the costal extremity, in order to oppose its projection. Finally, if the reduction is found impossible, it is better to leave the case alone, than by any operation to raise the depressed cartilage. Consolidation ought always to be effected by bony callus, exactly as in fractures of the ribs and cartilages."

On the Topical Medication of the Larynx in certain Diseases of the Respiratory and Vocal Organs. By EBEN. WATSON, A. M., M. D., Fellow of the Faculty of Physicians and Surgeons of Glasgow, &c. London: Churchill. 1854. 8vo. pp. 183.

WE have read this small volume with no little pleasure. Unlike many monographs, which we have from time to time had occasion to criticise, it seems to us to be peculiarly devoid of

that eyesore to medical reviewers,—irrelevant matter. Dr. Watson's object, as he states in his preface, is to explain the *rationale*, and to recommend the practice, of the topical medication of the larynx in certain diseases. To these two points he has scrupulously restricted his observations, and he has done so with a clearness and an earnestness which cannot fail to impress the reader with a most favourable idea of his merits as a scientific practitioner. In the light of a first appearance before the public, as an author of a regular treatise, we feel bound to say, that, without any peculiar claims to originality or perfection, he has produced a contribution whose many excellencies augur well for the success of future efforts. It is true that a large portion of the material has already appeared from his pen in the current medical literature of the day^a, but, so far from this being an objection, we believe that it presents a substantial reason for a higher appreciation of the work, inasmuch as the original observations have been, to use our author's words, "augmented by the results of a larger experience, and corrected by the suggestions of a more mature reflection."

It might be supposed that this work would savour much of *hobby* writing, from one or two observations which our author lets drop in his preface. Dr. Watson states he was one of the first, if not actually *the* first, in his part of the country, to practise the topical medication of the larynx. Now assertions of this nature are not necessarily called for, even by discoverers, and are apt to suggest the reflection that the writer is, to say the least, vain, or inclined to give undue credit to the value of his work. In the present instance, however, the reader will soon find that such a conclusion would be premature. So far from insisting upon the peculiar merit of the treatment recommended, after the manner of a zealot, our author observes:—

"I am far from wishing *the too ready* adoption of new procedures by the members of our profession, and I do not think this the inclination of the present time; but when, in a set of cases in which the ordinary treatment often fails, a new plan is recommended, as founded on known facts of clinical observation and of pathological theory, *then*, I do maintain it is *at least worthy of a trial*; and when the recommendation can be still further enforced by practical example, it would *almost seem* that it *ought* to be adopted, or that *reasons against it ought* to be produced."

This remark is rationally modest, and shows that our author is not carried away by any new idea. In another part he says:—

^a See the November Number of this Journal, for 1850; and the pages of the *Lancet* for the year 1851.

"Such happy results are by no means *always* to be looked for, and I am *far from* wishing to laud the topical applications beyond what they deserve." [The Italics are our own.]

And, in further corroboration of our view of the spirit which pervades the work, we may here add, that he does not hesitate to mention unfavourable as well as favourable cases, and that he takes the utmost care to restrict the adaptability of the system enjoined to such species of cases as physiologically meet the requirements of the most guarded ratiocination.

So much for the general scope and character of the work before us. It now becomes our duty to put our readers in possession of such details in the management of his theme as individualize the author, and will impart a clear conception of the practical points which distinguish the volume.

The work is divided into ten chapters: the two first relate to the use of topical agents; the third, fourth, and fifth, illustrate the utility of the treatment in laryngeal disease; the sixth to the ninth, inclusive, refer to the benefit of the treatment in other disorders in which the laryngeal *nerves* are involved; and the last chapter is devoted to the laryngeal complications of pulmonary phthisis.

The illustrative cases, given somewhat in detail, are forty-four in number, and occupy fully one quarter of the entire work. Besides these there are numerous casual references to some which have occurred in his own and others' practice. It will thus be observed, that a large proportion of space is devoted to illustration,—we think, however, not too much, as the importance and novelty of the subject demand such a mode of proceeding. We could have wished, indeed, that the cases narrated had been pressed into narrower compass, by being set up in a smaller type, as this would facilitate the reader's comprehension while perusing the volume.

Dr. Watson commences his treatise by a reference to the writings of Sir Charles Bell, who, we are told, was *the first* to put on record a case illustrating the use of topical applications to the interior of the larynx. It appears he employed a forty-grain solution of the *nitrás argenti*, and describes in his "Surgical Observations," published in 1818, his mode of procedure, and the circumstances under which he directed this new treatment. Our author refers in the same place, to a work of MM. Troussseau and Belloc, published in 1837. They were the first to use the whalebone rod and sponge attached. Three years after (and it would appear *independently*), Dr. Horace Green, of New York, formally introduced the new treatment before

the Medical and Surgical Society of that city; and, indeed, it is from *his* labours and devotion in this particular line of practice, that we may date the origin of all that has been accomplished of a satisfactory and practical character. Dr. Green has so identified himself with this particular manipulation, that he has made it quite a specialty in practice.

After passing some well-merited strictures upon the extraordinary pretensions of Dr. Green (amongst which we may mention, *en passant*, the assertion that he has pushed the probang not only to the division of the trachea, but, turning it aside, has passed it at will, in many instances, *into the right or left bronchus*, with as much ease and safety as the catheter is introduced into the bladder), Dr. Watson proceeds to describe laryngeal probangs, and the manner of using them. He places in a very clear light the precise extent of the respiratory membrane which it is possible to reach, and proves, by reference to the measurements of the length and distensibility of the aperture of the glottis, that, even in infancy and childhood, a proper instrument may be passed through the rima. As to the mode of using the instrument, the following paragraph is much to the point:—

“ But it may here be objected, that although it be granted that the rima is sufficiently long and distensible to admit the probang in the dead subject, we cannot expect the same conditions to present themselves in the living. The slightest touch of the probang may well be supposed to cause complete closure of the glottis; and this does seem an almost insuperable obstacle, at first sight, to the operator. But he must begin his manipulations by educating the upper part of the larynx and the fauces themselves to bear the presence of the instrument before he proceeds further; and, when this has been accomplished, he must not think of forcing through the closed glottis. He must rather surprise it during an act of inspiration, when its muscles are relaxed and its aperture open, for then he will find the introduction of the sponge both safe and easy.”

A little further on, a hint is given to the operator which he may well remember. Should the probang be felt as if detained on withdrawing it, he may be assured that the detention is produced by the contraction of the *pharyngeal* muscles, and that the sponge has not passed into the larynx at all. Dr. Watson here challenges a statement of Mr. Erichsen, made so lately as 1853, that the sponge has *never* been passed, in the living subject, beyond the true vocal chords; and maintains, that topical applications may be made throughout the whole length of the larynx, and also of the trachea. Here we have an illustration of the hackneyed adage, “ doctors differ.” It is a point, it must

be confessed, about which much might be written, but to decide which volumes would fail. There can be no question about the practicability of passing the instrument into the trachea *in the dead subject*; and instances are numerous where foreign bodies of considerable size have been drawn by an inspiration as low as the tracheal division. Still these facts do not give the required solution. Nothing short of the execution of the operative procedure, by means of a probang with a graduated stem, in the presence of a number of competent witnesses, would suffice.

Though we admit the correctness of Dr. Watson's view, judging from what we ourselves have observed, yet we must do Mr. Erichsen the justice of exercising a praiseworthy caution when he finds that his own observations have failed to convince him; and while it may be that he has not employed *all* the opportunities accessible to him for coming at the truth, we think that Dr. Watson has exhibited but little of his usual good taste when he brands his opponent with incompetency or prejudice.

The substances employed as topical agents by Dr. Watson are the nitrate of silver and the hyposulphite of soda and silver. Of the latter he has had but little experience, as it appears only adapted to a limited number of cases. The idea of using this new salt occurred to him after its recommendation by M. Delioux in some cases of urethral discharges. The manner of making this preparation is given according to M. Delioux's directions. "Thus: the oxide is precipitated from a solution of the nitrate of silver by potass, and re-dissolved in a solution of the hyposulphite of soda. On evaporation (which ought to be conducted in the dark), minute crystals of the hyposulphite of soda and silver are formed. They are very soluble in water, but not in alcohol: they may, therefore, be washed in the latter, and thus obtained perfectly free from impurity. The stars of these acicular crystals, deposited on a slip of glass, form a very beautiful microscopic object, especially when viewed by polarized light."

Dr. Watson considers that, if applicable in any case, it is so in those of vitiated secretion from the surface of a mucous membrane, and especially in those instances of pharyngo-laryngeal disease in which a strong stimulant would be hurtful.

The nitrate of silver is the salt which he has, however, chiefly used, as the one which has longest stood the test of time. In making solutions of it the *pure crystal* is always to be preferred; for, says Dr. Watson, if the solution contained impurities, they would adhere to the mucous membrane, and produce a

constant tickling cough till expelled, and might, in certain cases, excite or aggravate ulceration of the membrane.

Four solutions are employed:—No. 1, containing 10 grains to the ounce; No. 2, 20 grains; No. 3, 40 grains; and No. 4, 60 grains.

The *modus operandi* of this agent is illustrated by its action in the case of the excitement of inflammation in the web of a frog's foot. Thus, in the part which is most intensely inflamed (as in the inner circle whose centre is in a state of sphacelus), the solution, in the direct ratio of its strength, increases the stasis of the blood. It acts through the coats upon the contained blood by causing its partial coagulation, and likewise by withdrawing water from the serum for the crystals about to form. In the outer circle, however, the stimulant solution causes a renewed and increased dilatation of the vessels, and the retarded current moves on in them more freely than before; a cure being thus speedily effected if the exciting cause of the inflammation has ceased to act. Hence (in the first place), a reason for its beneficial action in all varieties of the inflammatory process, except the most intense.

Secondly, inasmuch as a strong solution tends to remove the watery part of the blood in the vessels by the law of *exosmose* and *endomose*, its value in cases of oedema of the glottis may be deemed an inference. Thirdly, the excitement or irritability which characterizes the state of the *nerves* in a part inflamed may be relieved by the action of the solution, which, as a stimulant, will remove the cause of the irritation.

Such are the principles upon which the author bases his views of the special use of the nitrate of silver as a local agent in laryngeal disease.

Dr. Watson seems not to have given due weight, however, to the modifications induced by the interposition of mucus in laying down his idea of the action of the remedy. It is well known that the coating, formed by the nitrate in combination with animal matter, protects the tissue in a great degree from the action of the caustic. Instances are not infrequent in which the solid nitrate has been in large quantity *innocuously* applied to mucous surfaces. Nevertheless, we know, from experience of its topical use in external inflammations, that the morbid action is subdued in most cases. In ophthalmic disease this has been long manifest, and in erysipelas, and all forms of ulceration. Judging from analogy, therefore, we should expect beneficial results in inflamed states of the larynx: and, to Dr. Watson's explanation, we can make little objection, more especially when he advises the employment of that amount of sti-

mulation only which is suitable for the degree of inflammatory action present in each particular case. We shall see, however, in the rules he gives for its application in special diseases, whether that explanation will practically suffice to meet their requirements.

In the management of "simple acute laryngitis" Dr. Watson premises antiphlogistic measures, especially depletion and emetics. "It is," says he, "after the use of both these remedies that the topical application is alone admissible;" and further, in some severe cases, where there is danger of chronic thickening of the mucous membrane, he advises the use of mercury at the termination of the acute stage. During the action of this mineral the topical application of the nitrate should be stopped, to be resumed only after the mercury has had its required effect, when the local treatment is to be continued and repeated daily, until all symptoms of laryngitis have completely disappeared.

In "croup," however, as being essentially a very different disease, he enjoins a mode of management in some respects the opposite. In this disease he admits, indeed, that he has always found the symptoms of congestion *increased* by the application of even a weak solution of the nitrate. This, his experience, he observes, is apparently opposed to the results of Dr. Green's cases. We say *apparently*, for it appears that his success was not solely, if at all due to the use of the nitrate; and, moreover, it seems more than probable that, in the successful cases, the *early* treatment of the disease, prior to exudation, was the main point for which credit ought to be claimed.

In this latter stage, which Dr. Watson has termed the "pre-exudation" (which is in reality a catarrhal inflammation), the application of a fifteen or twenty-grain solution he has found of essential benefit; and in an ulterior stage, when, as not unfrequently occurs, sudden œdema of the submucous tissue happens, the utility of the topical remedy is fully as marked as in the original simple form.

The importance of a differential diagnosis between the œdema glottidis and croup is fully insisted upon; and justly so, as in many cases it is obscure. The *absence* of the vibration of the glottis during respiration, coughing, or speaking, is noticed as a chief distinguishing mark of œdema. This physical sign, or its absence, is of course to be ascertained by auscultation of the larynx, which we must admit has been ever too much neglected by the profession. We are glad to find, then, that Dr. Watson endeavours to fix attention on its value, and we believe his work will have this effect; if so, we can

readily foresee the vast improvement which will ensue in the management of laryngeal disease.

Among the *chronic* afflictions of the larynx, which Dr. Watson notices in his fourth chapter, he refers to and gives an instance of Dr. Green's "follicular disease," which seems to be an affection (if we are to believe the latter author) very common in America; but, from the evidence of recent pathologists there is reason to think this frequency more apparent than real, as all the laryngeal symptoms in Dr. Green's cases may be accounted for by other than follicular lesion, a lesion confessedly rare as a *post-mortem* appearance.

The combination of laryngeal and pulmonary disease is next alluded to in a practical and forcible manner. We all know how difficult it is sometimes to ascertain the exact degree and extent of pulmonary disorder when the larynx is engaged. The latter masks the former. Dr. Watson, under these circumstances, appeals to the auscultation of the larynx for a solution, and gives some important pertinent hints, and directs attention to the admirable monograph of Dr. Stokes on Diseases of the Chest.

Minute directions are here given as to the use of the nitrate solution in "chronic laryngitis." The frequency of the application he makes to depend, in these cases, upon the degree of local irritation induced, during the existence of which no renewal should be attempted. They require rather a *continued* application of solutions of a moderate strength for a considerable period, and the combined use of general measures adapted to the constitutional state, or any existing complication.

Several cases of *aphonia* are detailed in Chapter V. Amongst these is noticed the interesting observation of paralysis of the glottidean muscles. Dr. Watson is inclined to think that there is an inflammatory stage *prior* to paralysis, and also to the state of fatty degeneration and atrophy, to which the muscular structure under these circumstances is so liable. However this may be, in some cases it is manifestly *not* a prominent cause; but, as he has found the benefit of a local stimulation of the glottis equally beneficial in *these* cases, and in the very opposite, viz., undue excitement of the laryngeal nerves,—it seemed necessary that something like the pathology given should be established.

Case XX., indeed, is detailed with a view to show that, though there was no satisfactory proof of any well-marked inflammatory action having preceded the palsy of the glottis, yet complete relief was afforded by the local treatment. The difficulty is ingeniously encountered by a kind of pathological explanation, to the effect that over-exertion of the organ, when

too long continued, produces, after a degree of congestion, obstructed circulation and subsequent anemia, and even atrophy, —this obstruction being due to the tonic contraction induced by the continuance of the muscular effort; in fact, the impression of great fatigue. Dr. Watson admits that this species of explanation may be deemed rather strained; and when we consider that stimulation of the glottidean nerves is the desideratum in many cases of aphonia, there seems no necessity to have recourse to any such hair-splitting reasoning.

The author gives an excellent illustration of the manner in which relaxation, thickening, and ulceration of the mucous membrane of the tracheo-laryngeal tract may produce alterations in the modulation and tension of the vocal sounds. The explanation is based upon physiological principles established by Mr. Wheatstone and M. Savart; and it presents a very good idea of how the practice of the practitioner is made to hinge upon scientific data. The use, in such cases, of the caustic solution depends upon its stimulant effect on the relaxed vascular condition of the membrane. The thickening yields, in like manner, by improving the tone of the capillaries, and the ulceration heals by means of a similar influence being effected upon the circulation in the immediate vicinity of the ulcers. Dr. Watson concludes this part of his subject by an allusion to a very important, but not generally noticed, cause of aphonia, which we shall here quote as being at the same time a fair specimen of his style:—

“ But another very fruitful source of aphonia, in some of its many degrees, is *speaking in an unnatural tone of voice*. Such a tone is apt to be assumed by a person of weak vocal power in his attempt to make himself heard in a large room; and it is also adopted, sometimes unconsciously, in imitation of one who has been frequently listened to. But it is needless for me to inquire into all the causes of the assumption of a false tone of voice. It is more to my purpose to point out its noxious effects on the speaker’s voice, by its diminishing the ability of the vocal muscles to act for any length of time without excessive fatigue. Let any one attempt an unusual or unintended use of any other set of muscles, and he will soon be persuaded of the truth of this assertion; and surely the evidence brought forward in the preceding part of this chapter renders it unnecessary to prove that the muscles of the glottis form no exception to the general rule. It is, then, of great importance to every public speaker to ascertain the *natural* tone and pitch of his voice. Much may be safely done by management and practice to increase the power of the voice, if only it be used *within its natural range*; and if for no other purpose than the ascertaining of this range, every person who intends to speak much in public should begin by studying the tones

of his voice in singing as the most important lesson he can learn in elocution. I am quite persuaded that were clergymen to pursue some such plan as this in their early life, they would afterwards be less frequently affected with loss of voice; and I am supported in my opinion by the fact that barristers, who generally speak in a conversational tone, and professional actors and singers, who only educate the particular kind of voice with which they happen to be gifted, are very seldom the subjects of aphonia; yet no one will deny that they, especially the singers, exert their voices prodigiously, and far more than most clergymen require to do so, in the discharge of their duties."

The Chapter on "hooping-cough" is well worthy the attention of the profession. The remarkable results recorded of the use of the topical treatment in the hands of M. Jobert and the author clearly prove the value of this new mode of treatment. It appears from the statistics given at page 119, that 57.4 per cent. have been cured in two weeks; 36.5 per cent in three to four weeks; while only 5.3 per cent. resisted the treatment, and the minute fraction of barely 0.6 per cent. died. These proportions, we would say, are fairly given; for, though many of the cases which were longest under treatment had relapsed, the whole period from the commencement to the end of the treatment, without any distinction, in every instance, was taken into account. These results contrast very favourably, indeed, with the statements of the principal modern authors, the average of which would extend the duration of the disease from one and a half to three and a half months.

Dr. Watson, as usual, attempts the *rationale* of this mode of treatment; and in doing so we are inclined to think breaks new ground. His idea of the disease is simple. He considers the phenomena, characteristic and essential to the disease, to be the following: first, the poisoning of the blood; secondly, the inflammatory state of the pharyngo-laryngeal membrane; thirdly, the irritation or excitement of the laryngeal nerves, manifested by the characteristic *whoop*. He further believes, that the poison is generally eliminated, or rendered innocuous, by the time that the spasmodic stage has reached its acme, and that all inflammation, *beyond* what has been mentioned, should be deemed a complication. In this view of the pathology he has been partially borne out by Dr. Todd, who, however, considers *all* inflammatory action occurring in any case as complicating the disease.

As to the mode of action of the caustic solution M. Jobert's view is endorsed with but little variation, namely, that it operates mainly in subduing inflammation. In confirmation

of this view, Dr. Watson has ascertained, that the rapidity of cure by topical means is in an inverse ratio to the severity of the inflammatory action. The mere abatement of this last condition seems, however, to exercise but little effect in subduing the nervous excitement. This the experience of every practitioner manifestly proves; while it is under these very circumstances that the topical plan is most rapidly effective. Dr. Watson still lingers on the opinion, that the affection of the nerves in these cases is more or less of an *inflammatory* character. This point is difficult of proof, and, at best, it rests only upon assertion or analogy. Besides, if we admit that the nitrate can act upon the fibrillæ of the nerves as a sedative agent (as he himself, in a former part of the volume, seems to allow), there is no necessity for such an explanation.

An important objection to the topical treatment of hooping-cough is mentioned at page 114. Granted that this treatment should completely remove the local manifestations of the poison, it does not necessarily follow that the poison itself has become neutralized. This objection is met by the hypothesis, that the whoop, and, in short, all the symptoms ulterior to the catarrhal stage, are an evidence rather than that a peculiar morbid poison *has been*, than that it *is then present* in the blood; and he adduces the instance of so-called *species*, whose action he declares is no very satisfactory proof that they are direct antidotes to the poisons which originated the diseases wherein they are specially employed. He then arrives at the conclusion, that the only reasonable plan of managing poison diseases is to shorten or cure the secondary effects. This is, at least, all that we have in our power, until we discover antidotes to their remote causes.

This matter, we cannot think, is destined to be settled by any process of reasoning. The touchstone of experience can alone decide to the satisfaction of the profession: and we are willing to give credit, so far as it goes, to that which Dr. Watson has furnished, which is thus embodied in the following sentence, *viz.*—

“ If the disease be thoroughly subdued in its first attack, no recurrence of it need be apprehended during the patient’s life. I make this statement in full knowledge of the succeeding history of all the cases in which I have employed the topical treatment; and many of them have been again freely exposed to infection.”

The new treatment introduced by Dr. Arnoldi, and so strongly recommended by Dr. Gibb in an excellent monograph on hooping-cough, is briefly referred to in rather unfavourable terms. However open to objection Dr. Gibb’s view of the

modus operandi of nitric acid in this disease may be, we feel assured that Dr. Watson has not done justice to its claims. His trial of the remedy has not been satisfactory either to himself, or, we will venture to add, to us; and we state so from some experience. We consider that Dr. Gibb deserves the thanks of the profession, for advocating so ably the use of this remedy, which, though it cannot lay claim to such rapid cures as the laryngeal treatment, has, in our hands, succeeded in cutting short the malady when compared with the ordinary routine treatment of our ancestors.

Dr. Watson draws attention, in the seventh chapter, to the state of the larynx in cases of "spasmodic asthma," a subject, which, he says, "has not hitherto received adequate attention, either from pathologists or physicians." He shows very clearly, we think, both from physiological reasoning and clinical observation, that spasm of the glottis is an *essential* part of a fit of asthma; and that, consequently, the topical treatment is pathologically indicated. We believe this is the true view. Hitherto the routine treatment of asthma has been rather an *opprobrium medicinae*. There was no certainty, no confidence. Remedy after remedy was tried, and too frequently with the same effect—failure. Dr. Watson very properly cautions his readers against cherishing the idea that all asthma cases will yield to the local treatment. It must be always understood that the cardiac form is an exception; and, we would add, all cases in which the substance of the lungs is engaged, or the contractility of the respiratory membrane permanently impaired.

The manner in which gastric disorder may sympathetically react upon the laryngeal nerves forms an interesting topic in the eighth Chapter. It is also distinctly shown that enlargement of the tonsils, and elongation of the uvula, may spring from disorder of the digestive system. So that, while we should never omit in the management of these cases the correction of the stomach affection, we cannot effect a complete recovery without such local treatment as will remove the inflammatory action of the pharyngo-laryngeal membrane, and abate the nervous irritability. This latter will be best realized by the free topical use of the nitrate. Even in "hysteric cough," somewhat of a similar plan may be judiciously adopted with good effect: for, however beneficial may be our remedies for improving the general health and the functions of the different organs in this protean malady, we must not forget, that local nervous irritation may remain to harass the patient. Similar observations are applicable to the management of "laryngismus,"

and "epilepsy" itself, of which the laryngeal spasm is, perhaps, the most important feature. Our author was, we believe, the first to recommend the topical use of the nitrate in this most obstinate disease. It is not advised, however, in the light of a curative agent; but rather one which will tend to ameliorate its severer symptoms, and give the patient the best chance for ultimate natural recovery by the wearing out of the disease. If, indeed, further experience should confirm Dr. Watson's view, it will be a glorious triumph for the cause of science.

The laryngeal complications of "pulmonary phthisis" constitute a set of cases in which much relief may be experienced from the harassing cough by topical treatment. Relief, we say, is all he claims, as effected by this plan; but all practitioners must admit that even this is a great step in the management of a disease which, under favourable circumstances, it is admitted, may lead to a spontaneous cure. We all know that it is not so much the existence of tubercular deposit, which produces the multiform and distressing symptoms that characterize a case of phthisis, as the associated *inflammatory* complications which so frequently arise in the course of the malady; and, when the larynx becomes the seat, it is manifest that much may be done by direct applications.

At page 168 Dr. Watson gives the following list of laryngeal complications in which he has employed the topical treatment:—

- "1st. Incipient cases, in which cough was caused by—
 - a* Actual laryngitis.
 - b* Secondary nervous irritation of larynx.
 - c* Secondary irritation by bloody sputum.
- "2nd. Advanced cases in which cough was caused by—
 - a* Laryngeal ulcers without a cavity in the lung.
 - b* Laryngeal ulcers with a cavity in the lung.
 - c* Laryngeal irritation by purulent sputum."

From this it will be seen that there is considerable scope for the use of the nitrate. In all, relief, partial or complete, may be obtained so far as the laryngeal condition is concerned; and, in the concluding words of our author, in whose sentiments we fully concur, "by alleviating or curing these, morbid states of the larynx much distress may be saved to the patient, and time may be gained for the treatment of the pulmonary lesions and the constitutional disease."

Having thus analytically touched upon the chief points noticed in the volume before us, and having, to some extent, indicated the manner in which these have been treated, our readers will, we think, have no difficulty in agreeing with us

that the work is an able and original exposition of the value of the new treatment. In every line it appeals to scientific data and to philosophic judgment. The cases adduced seem to be given, not so much in illustration merely of its superior efficacy, as of the manner in which the local treatment *brings about* a recovery. Dr. Watson has fairly laid the whole matter before his brethren. He has stated the case rather as a judge would charge a jury than as an advocate pleading for a particular cause. He has shown wherein the treatment he recommends may fail, as well as where it may succeed. He has enunciated the circumstances which interfere with its action, and detailed the special indications for its adoption in each particular case. He does not say that this is our sheet-anchor in *any* case: but, upon the experience which he is enabled to furnish, and upon careful physiological and pathological reasoning, he asks his brethren to give the plan a trial, and thereby ascertain, on a scale which no single individual can command, how far it may be useful, and how far prejudicial. Not for the sake of science alone, not for the sake of supporting a pet theory, but on the broad ground of relieving suffering humanity, he calls upon the profession to decide for itself, whether the "topical medication of the larynx" is deserving or not of the commendation he has bestowed upon it.

As the work of a careful and clear-headed reasoner and accomplished practitioner, we strongly recommend it to the notice of the profession, fully satisfied that it is valuable, not merely for the direct information it contains, but also for the practical suggestions which will arrest the perusal of every page. Judging from this single specimen of his talents, we feel convinced that the author of this volume is destined to take a high place in the annals of medical literature.

Clinical and Critical Contributions to Obstetric Science and Practice. I.—*On Uterine Polypus: its Nature, Early Detection, and Treatment.* By ROBERT BARNES, M.D. (Lond.), Member of the Royal College of Physicians, &c., &c. London: Churchill. 12mo, pp. 44.

THIS is a very good resume of the knowledge we possess on the subject of uterine polypus, with a confirmation of the more recent views of certain pathologists by the author's own researches. Professor Vögel has shown that the structure of the so-called fibrous tumour of the uterus is microscopically identical with the proper tissue of the organ; and the author, following Dr. Oldham

and Dr. Crisp, has obtained the same results. Nay more, it would appear that the smaller cellular polypi partake of the character of the tissue from which they arise, so that two at least of the different kinds of polypi may be regarded as hypertrophy of existing structure, and not a new formation. The symptoms to which polypus gives rise are very well stated, but we think that the author would have done well to have entered more fully into the distinction between fibrous polypus and other growths of polypoid form, which, though not rightly included under the term, are practically very liable to be treated as polypi.

We quite agree with the author's remarks as to the diagnosis of intra-uterine polypus, but perhaps we are hardly disposed to attribute as much significance to the general symptoms; the truth is, we can never feel sure of the existence of a polypus until we either see or feel it, although we may have strong suspicions. For attaining this certainty in the case of intra-uterine polypi, we have no hesitation in concurring with Dr. Barnes in the propriety of dilating the os uteri by means of sponge tents. As to the treatment, provided the morbid structure is removed in a reasonable time, it does not much matter whether excision or ligature be employed. It is often of more consequence to attend carefully to the subsequent treatment. The danger is by no means necessarily past when the polypus is removed. Upon the subject of treatment the author's observations are so good, that a little more detail would be very acceptable.

On the Relative Merit of the two Operations for Stone: two Lectures delivered at the Royal College of Surgeons of England, May, 1854. By FREDERICK C. SKEY, F.R.S. London: Churchill. 1854. 8vo, pp. 55.

In instituting any comparison, howsoever perfect, candour to admit the absolute merits of the things compared, an obvious desire to draw unbiassed conclusions, and logical accuracy in making the deductions, are essential to render it of a nature so as to be influential on the mind. This is true of all comparisons, and no less so in contrasting the different plans of treatment in the practice of medicine and surgery, particularly the various methods of operating, than in those arts and sciences of apparently greater magnitude, and whose importance is more widely estimated. To advocate the cause of any plan or principle is one thing; to criticise it, with a view to ascertain its exact merits,

and to establish its relative advantages, is another. In order to arrive at a just appreciation as to which is the better of any two given plans of treatment or methods of operating, the merits and demerits of each must be exposed and fairly weighed, the scale being turned in favour of the one or the other according as the former preponderate over the latter. It would be well if this were more generally remembered, for the decisions arrived at are rarely impartial. Prejudice has ever been the great barrier to the progress of improvement in every art and in every science. To it may be ascribed the opposition with which the treatment of aneurism by compression has been met, which has caused a blind adhesion to one particular method of treating stricture of the urethra, and which has divided the profession into parties advocating the most conflicting sentiments on various subjects. Thus it is we have pure lithotomists and pure lithotritists. It is not to be supposed that those who adopt this one-sided course are always insincere and wilfully blind. The mind becomes unconsciously prejudiced, and impressions first formed, or made under peculiar circumstances, take such possession of it as to envelope it in a cloud, and prevent the light of conviction from gaining access.

With respect to the question which it is the object of the present pamphlet to determine,—“the relative merit of the two operations for stone,”—we feel ourselves bound fully to concur in the author’s sentiments, so strongly expressed in the Preface:—

“If conservative surgery be a desideratum, if preservation, not only of a part, but of the whole machine, which is equivalent to life, be the object and the necessary issue of scientific inquiry into the best means of alleviating disease, we may class the operation of lithotritry among the most valuable resources in modern surgery.”

Let us not, however, prejudge the point, but draw our conclusions after it has been investigated.

First,—What are the advantages of lithotritry? Its chief advantage consists in the fact of its not being a cutting operation, by which it is, compared with lithotomy, exempt from the dangers of inflammation. Erysipelas, different kinds of diffuse inflammation, sloughing of the areolar tissue of the pelvis, and peritonitis, are common consequences of lithotomy; whereas lithotritry, though not free from such dangers, is much less liable to any one of them. When these evils do arise as the result of lithotritry, they are much more likely to be attributable to want of skill or caution in the performance of the operation than is the case in lithotomy. Comparative exemp-

tion from danger, then, is the chief recommendation which lithotomy possesses, and which gives to it an obvious superiority over the sister operation. The advocates of lithotomy, however, can launch three of what they may view as powerful arguments against lithotomy, and exultingly exhibit the former operation in strong contrast with it: one is the tediousness of the cure; another is the chance of relapse from the non-expulsion of every particle of the calculus from the bladder; a third is the chance which exists of some of the fragments becoming impacted in the urethra. Let us weigh each of these arguments fairly. The tediousness of the process of cure is only a disadvantage, it is not an objection to lithotomy; and since its degree must depend on the size of the stone and its physical peculiarities, the argument on that ground cannot have universal applicability. A small, friable stone may be completely reduced by the lithotrite at one sitting. Again, if the length of time with which a calculus is to be got rid of comes to be a consideration in any given case, lithotomy is contra-indicated; the argument, therefore, against it, grounded upon the tediousness of the cure, has but little weight in the cases fit for the performance of that operation. The second argument,—the danger of relapse from an unexpelled fragment becoming the nucleus of another calculus, possesses, perhaps, less weight than the former, since such an event can rarely occur except from the want of proper attention on the part of the surgeon. In no instance should a patient be pronounced perfectly cured from his calculus by lithotomy until he has been sounded frequently, under different circumstances, and if the fragment should be so small as to escape detection, it must, in all probability, be small enough to pass through the urethra, and be expelled as the others. The third argument, the risk of fragments becoming impacted in the urethra, certainly possesses some force, but not to the extent that might at first appear, and which the opponents of lithotomy would wish to press. It is not often that fragments become arrested in the urethra; and when they do, it is rarely they give rise to any serious consequences. The fragment can be frequently pushed back into the bladder, or drawn out of the canal with a forceps or scoop, and where this cannot be accomplished, the fragment will often make its way forward, without any artificial assistance, after a short time. Out of six or seven cases of lithotomy which are in our recollection at present, in only one did impaction occur so as to be productive of any annoyance. In this case the bladder was irritable and the mucous lining of the urethra was in a state of congestion, and the calculus fractured into peculiar

angular fragments; complete retention of urine, however, never occurred, so that it did not become necessary at any time to cut down and open the canal.

Such are the principal arguments urged against lithotrity, and such its principal disadvantages; and we shall now array these against the disadvantages of lithotomy. "It would," observes Mr. Skey, "be useless to discuss the subject of the relative merits of the two operations, unless we have a clear starting point by which to gauge the question of merit or demerit."

The "consequences which either retard recovery, or which lead to a fatal result" in lithotomy are thus enumerated by the author:

- "1. Collapse without loss of blood.
- "2. Hemorrhage occurring immediately, or consecutively.
- "3. A protracted operation, from one or various causes.
- "4. Wound of the rectum.
- "5. Inflammation of the bladder, involving the substance of the organ.
- "6. Sloughing from infiltration of urine."

This is a formidable array of evil consequences, and when added to those we have already alluded to they make the operation of lithotomy one indeed of a most serious nature. With respect to the mortality of lithotomy, Mr. Skey arrives at the conclusion, taking the average "in persons of all ages," and taking the average of the reports of the operation as performed in France as "one in five;" "can it then," he says, "be reasonably asserted that positive danger to life does not attend on the operation of lithotomy?"

Instead, however, of entering into any elaborate argument as to the merits or demerits of each operation, the author has preferred simply to state the evils of lithotomy, and to examine more in detail the "injurious consequences" of lithotrity, leaving conclusions to be drawn by inference. The latter are—

- "1. Protracted and occasionally severe pain.
- "2. Inflammation of the mucous membrane of the bladder.
- "3. Lodgment of fragments of stone in the urethra.
- "4. Hemorrhage from the bladder or urethra.
- "5. Extravasation and abscess from rupture of the mucous membrane of the urethra.
- "6. Collapse from disease, aggravated by a series of operations of the urinary system, involving either a sacculated bladder, from the cysts of which the remaining fragments of the stone cannot be disengaged, or positive disease of the kidneys themselves.
- "7. The supposed difficulty of removing every fragment from the bladder."

The third and last consequences, however, together with one of the disadvantages mentioned before, the tediousness of the process of cure, are those only which, strictly speaking, apply to lithotritry; all the others enumerated occur almost invariably as the result of the operation unskillfully performed or injudiciously undertaken. The possibility of anything being abused is no argument against its use; so the possibility of an operation being rendered dangerous by ignorance is no argument against its employment when it can be properly carried out.

With respect to the first consequence we agree, to a certain extent, with Mr. Skey's remarks—

“1. With regard to *physical pain*, there is no doubt that it is the attendant on both the operation and the after treatment. The question is not dissimilar from that of *danger* to life. We suffer a *multitude* of positive evils rather than encroach within the circle of *one* danger; and we gladly compound for a repetition of many smaller sufferings, to avert the real misery of a single large one. The *degree* of suffering from the action of the lithotrite may, however, be inferred from the fact that we seldom resort to the employment of anæsthetic agents to mask our operation; still, pain is an evil to be thrown into the scale against the operation.”

As regards the fourth consequence, “hemorrhage from the bladder or urethra,” he says—

“Certainly, it is an uncommon event, and when present, is only occasionally severe, and still more rarely is it as serious as in the case I have quoted. The question may be asked, does it in any material degree retard recovery? I think not; and if I am not incorrect in my creed, that without violence to the bladder, always to be restrained by the operator, it will rarely, if ever, occur, it will take its position among the most unusual events incidental to the practice of lithotritry.”

In all the instances of lithotritry which have come across us we have never known hemorrhage to any amount to result from the operation. It is no uncommon thing for the urine to be tinged with blood for two or three days after the operation, and which seems, as Mr. Skey observes, to be unproductive of harm, but anything approaching to serious bleeding from the bladder we have never witnessed. Any one who has performed lithotritry half a dozen times, and knows the ease with which a calculus can often be caught and crushed in the bladder by means of the lithotrite, must feel convinced that where more than a very slight bleeding occurs, either the instrument must have been rudely and unskillfully handled, or the mucous coat of the bladder have been unsound. The fifth consequence of

lithotrity, "extravasation and abscess," is obviously attributable altogether to mismanagement or unjustifiable rudeness on the part of the operator.

"If from any cause the mucous membrane is torn and separated from its sub-tissue, the efforts at micturition, when unusually potent, force the urine from the channel into this tissue, and abscess is almost inevitable."

Further on he observes,—

"If in the perineum, that region will become swollen as in the early stage of ordinary perineal abscess; if more forward, a thickening may be felt along the track of the corpus spongiosum, varying in form and size. This swelling, when opposite the serotum, occasionally presents itself forwards in the form of a conical thickening, the base of which is placed on the urethra, and is quite movable under the hand, so much so as to be readily mistaken for the testicle. If it attach itself to the lower part of the canal, in the neighbourhood of the membranous and prostatic parts of the urethra, and especially if posterior to the triangular ligament, its consequences may be most serious, because the escape of urine will probably be large, and the communication with the pelvic tissue more than merely probable. Moreover, the nature of the injury is in this region more obscure, and less tractable."

The sixth consequence, "collapse from disease," is also the fault of the surgeon. The author truly remarks that—

"An operation in this condition of the urinary organs is in contravention of sound judgment, and correct diagnosis."

Again, he very properly says:—

"If disease exists, it is our duty, if possible, to detect it by inquiry and examination, and to reject the case as inapposite to the operation."

The author then gives a couple of cases in illustration, and makes some very good practical remarks, particularly on "sacculated bladder." The last consequence of lithotrity we have already dwelt upon, and we have shown the amount of weight to be attached to it: we allude to the "difficulty of removing the last fragment of stone." Mr. Skey has shown his opinion as to the unimportance of this consequence, which, as before stated, has been used as an argument against lithotrity, when he designates it the "supposed difficulty." He observes—

"If it be so small as not to exceed the caliber of the canal, it will of course pass away without difficulty. If it be too large to reach its destination through the canal, I maintain that it requires

no erudite tact to detect it with a *fine sound*, well and carefully employed in exploring the bladder. This inquiry may be made, and repeated with instruments of varying form and magnitude. The best resources, both of touch and hearing, are of course brought into requisition in perfect silence, but beyond this no refinement is necessary. We have, indeed, no evidence in the reported cases of relapse, that re-formation of stone is attributable to this cause."

The author next enters upon the consideration of the circumstances which forbid lithotripsy: "I shall," he says, "accomplish this end more readily by adopting the negative, and by stating under what symptoms the operation of lithotripsy is *not* the operation to be selected." He then describes the steps of the operation itself, and, with respect to the most important one, the seizure of the calculus, he says:

"If, on having expanded the instrument, the lower blade be pressed downwards towards the rectum, by the elevation of the handle, the bladder will assume a conical form, the apex of which is directed downwards. Into the apex of this cone the stone will fall *three times out of four*, and I believe I may say in a yet greater proportion. I have myself caught the stone on one occasion ten times in succession, and I have repeatedly fixed the stone nine times, the blades being expanded and closed twelve. No action can be more simple, or more easy of execution. If the stone adhere to the coats of the organ, or if it fail, from any other cause, to fall into the concave blade, a slight shake of the instrument, or, what is less annoying to the patient, a slight shake given to the pelvis with the open hand, will generally succeed."

We are fully aware of the ease with which the calculus can be frequently caught by a lithotrite in the bladder when the manœuvre above described is adopted, still it is not so easy *always* as Mr. Skey would lead us to believe. In order to catch a stone quickly and with precision the manœuvre alluded to must be observed, but it will fail altogether in many instances from a variety of causes, and even in those in which it succeeds a variety of causes will influence the ease or difficulty with which it accomplishes its object. As to the practice of seizing a calculus as often as nine, ten, or twelve times in succession, it is, in our mind, to be condemned, no matter how easy of accomplishment it may be; six times in succession is frequent enough in any case, and, unless the bladder be extraordinarily placid, anything more than this it will seriously resent. So far as the accidents connected with lithotripsy are concerned, they are—

"1. The convex blade of the lithotrite may be so strained by the pressure of the screw as to fail in its complete closure into the

corresponding blade. 2. The blades may be so clogged by fragments that it is impossible, by reason of their accumulation, to push home the convex blade. 3. The near or convex blade may snap off in the act of crushing the stone."

"Such are among the accidents to which the operation of lithotripsy is liable; and if their importance is to be tested by their severity, let them also be judged by their infrequency. In the aggregate of cases they are rare; and the worst alternative that the most serious form can involve is an appeal to the knife, and to extract the stone by means of lithotomy. This refers to the fracture of the instrument, for which we have obviously no other resource."

Such is a very fair and candid exposure of the consequences, and accidents, and difficulties, and dangers of lithotripsy, and we think that few, after carefully weighing them, and aware beforehand of the nature of lithotomy, will withhold consent from Mr. Skey's ultimate conclusion, viz.: "the certain presence of danger inseparable from one form, and its occasional though rare presence in the other."

As to the manner in which Mr. Skey has endeavoured to decide "the relative merit of the two operations for stone," we feel bound to state that he has accomplished his task with ability, and in perfect fairness to both sides of the question. He has also dealt with the subject as one practically acquainted with lithotomy and lithotripsy; and his experience having been extensive, his observations must carry with them considerable weight.

Transactions of the Belfast Clinical and Pathological Society for the Session 1853-54. With List of Members, Laws of the Society, and Report of the Council; to which is added, a Catalogue of the Pathological Museum. Belfast: Mayne. 1854. 12mo, pp. 132.

WE have rarely been more gratified at the receipt of a work than when the "Transactions of the Belfast Clinical and Pathological Society" was placed upon our editorial table. A proof of the energy, talents, and perseverance, of our professional brethren in the northern capital of Ireland we needed not: of this our own pages afforded abundant evidence for years past; but the result of their conjoined labours to advance medical science and literature, as exhibited in this well-got-out and carefully edited little volume, shows that their newly established Society may fairly take its place alongside the Pathological Societies of Dublin (the first established), and of Lon-

don. It is really highly creditable to the officers, and to every member who has furnished his contribution to so excellent a repository of rare and interesting cases. The beginning is, in this instance, more than half the battle, and from such a commencement we augur many valuable additions for years to come to the literature of our profession.

The Book of Prescriptions: containing 2900 Prescriptions collected from the Practice of the most eminent Physicians and Surgeons, English and Foreign. Comprising also a Compendious History of the Materia Medica of all Countries, alphabetically arranged, and Lists of the Doses of all Official or established Preparations. By HENRY BEASLEY. London: Churchill. 1854. Post 8vo, pp. 543.

The Practitioner's Pharmacopæia and Universal Formulary; containing 2000 Classified Prescriptions, selected from the Practice of the most eminent British and Foreign Medical Authorities; with an Abstract of the Three British Pharmacopæias, and much other useful Information for the Practitioner and Student. By J. FOOTE, M. R. C. S. L., &c. London: Renshaw. 1855. Post 8vo, pp. 368.

As an example of how a work undertaken may be very indifferently or extremely well executed, we have classed together the two books the titles of which are prefixed. Both prepared with good intent, to place in the hands of the junior practitioner a "ready reckoner" of prescriptions, one may be regarded as a useful and trustworthy assistant, the other as a careless and worse than indifferent compilation. Mr. Beasley has brought to his aid the skill and ability in selection which he had previously displayed in his "Pocket Formulary," and "Druggists' Receipt Book," the several editions of which have been noticed in our pages at the time of their publication; while Mr. Foote, exhibiting not alone carelessness, but reprehensible ignorance, has published a farrago of prescriptions—good, bad, and indifferent, old and new, chemical and unchemical—all strung together without rhyme or reason. The former, therefore, we warmly commend to our readers; the latter we altogether condemn.

PART III.

MEDICAL MISCELLANY.

PROCEEDINGS OF THE DUBLIN OBSTETRICAL SOCIETY.

SESSION 1854-5.

FIRST MEETING, DECEMBER 1ST, 1854.

AN introductory address was delivered from the Chair by DR. ALFRED H. M'CLINTOCK, Master of the Rotundo Lying-in Hospital.

DR. HARDY brought before the Society a specimen of a large growth from the uterus, and gave a detailed account of the case^a.

DR. CARTE exhibited the genital organs of the female tapir.

SECOND MEETING, JANUARY 6TH, 1855.

DR. HARDY gave a report of a case of induction of premature labour by means of the "water douche."

A lady, aged 27, whose first accouchement, which took place in the country, was tedious and severe, complicated with convulsions, and terminated by the crotchet, was placed under his care for her second confinement. In June, 1853, her second labour took place, was of thirty-two hours' duration, and attended with alarming symptoms, which called for immediate interference; it was terminated, as her first, by perforator and crotchet.

On the approach of her third confinement Dr. Hardy was again engaged to attend her, of which the following is an account in his own words.

" From particular inquiry I learned the time, which she seemed to know with great accuracy, when the seventh month would terminate; accordingly, on the 30th of December last, which was ten days later than the end of the seventh month, I directed a stream of tepid water against the os uteri, and confined the water by means of my right hand, which directed the pipe of the instrument, until I had fully distended the vagina; this was continued for about five

^a See the present Number of this Journal, page 122.

minutes, the water being allowed occasionally to flow out of the vagina. The operation was twice repeated on this day; after the third time pains were felt in the back, like the setting in of labour; but they subsided as the patient went to bed, and slept well. Next morning the douche was repeated, when the os uteri felt more open than on the previous day; it was soft and dilatable; the head was felt through the anterior portion of the uterine wall, pressing on the cervix, and the fetal heart was heard beating strongly. After the fifth douche, which was given at about 3 o'clock in the afternoon, I was able to feel a portion of membrane protruding through the os.

"On visiting the patient again, at 9 o'clock p.m., I was informed that shortly after the douche she had a rigor, and there was some sanguous discharge, which merely stained a napkin.

"As the os did not feel more open than when last examined, and there was no pain, I gave the sixth douche, the only one that gave rise to real uneasiness, and this only during the time the vagina was fully distended.

"I was sent for between 1 and 2 o'clock a.m., and on reaching the patient at ten minutes past 2 o'clock I found the os uteri fully dilated (the labour, which was exceedingly easy, having set in at a little after 12 o'clock), and the membranes protruding to nearly the os externum: but instead of touching the head, which had been distinctly felt before, I now discovered an extremity floating in the liquor amnii. In about five minutes the membranes ruptured with a pain, and the presentation was found to be the feet. The contracted state of the pelvis now became very evident as the body of the child advanced; great difficulty was experienced in getting down the arms, and the head, which came with the face towards the left side of the pelvis, required very considerable force to make it pass the contracted brim; when this was accomplished all difficulty was over, and delivery was completed with the utmost facility.

"Contrary to my expectation, the child's heart had not ceased to pulsate: I therefore resorted to the usual means for resuscitation, and so far succeeded that several attempts were made to cry; but there had evidently been too much injury inflicted in its passage through the narrow brim, so it gradually became more feeble, and died in little more than an hour after its birth. This child and the former were males; the first was a female. It is only necessary to compare the present with the two former labours of this patient, to be convinced of the utility of induction in her case: the first was upwards of sixty hours' duration; the second thirty-two; and the last not quite two, and during these two hours very easy, till the shoulders and head were passing.

"Although Dr. Sinclair has so fully detailed the induction of labour by the douche, I make no doubt that he will feel interested in hearing from another who has used his most valuable instrument, something of its action.

"Many present are aware that the induction of labour by the

uterine douche was first brought to our notice by Dr. Kiwisch of Wurzburg. His mode of proceeding the Society are already well acquainted with, the details of which are to be found in the "N. Zeitschrift f. Geburt-k," xxiv. (1848) p. 153, as reported in Braithwaite's Retrospect, vol. xxx. p. 265.

"In the case related by Dr. Shekleton, it was an elastic bottle syringe that was used. Dr. Sinclair made improvements upon this instrument, which are described in his paper contained in the February (the 33rd) Number of the Dublin Quarterly Journal, p. 242, and to it I shall presently direct attention."

Dr. Hardy then alluded to Dr. Tyler Smith's method of using the water douche, with alternate warm and cold streams, and to the method adopted by Dr. Cohen of Hamburg, as described in a paper published by him in 1846, in the "N. Zeitschrift f. Geburt-kunde," xxi. p. 117, where he relates a case in which labour was induced in six or seven hours by means of a common syringe, whereby water, to the amount of two or two and half ounces was thrown between the anterior wall of the uterus and the membranes; it was conveyed from the syringe by a tube from eight to nine inches long, with a diameter of from one-sixth to one-eighth of an inch, the tube being curved to the extent of a female catheter. Dr. Hardy then continued:—

"In resorting to the douche for inducing labour in the case now detailed, I constructed a very simple instrument, on Dr. Kiwisch's plan, consisting of a large garden watering-pot, to which a tube of an inch in diameter at its under part was attached; from this tube an India-rubber one of nearly the same diameter was fastened, and to it a stop-cock, which had a gum-elastic tube for passing up to the os uteri. From a vessel so large, and suspended at about ten feet from the ground, I expected to have obtained very considerable force, but a trial of it convinced me that it was deficient, as the stream of water was quite too feeble to distend the vagina; nor did it come against the os uteri with what I considered sufficient impetus to hasten dilatation; consequently, I laid it aside, and adopted Dr. Sinclair's syphon, which answered the purpose to my entire satisfaction, both in forcing a strong continuous stream against the os, and in distending the vagina to its fullest extent. There was only one thing in the instrument that I found might be made more convenient, and that was the conveyance pipe, which, being fixed to the instrument firmly, was occasionally pulled, to the inconvenience of the operator, by the person who pressed the elastic cylinders. To remedy this, I attached an India-rubber tube, which rendered the action of the instrument perfectly convenient, so that the tube in the vagina could be held without interruption against the os in whatever direction was found most likely to cause dilatation.

"It has been remarked, that after the third douche was given, pains came on like the setting in of labour, but subsided on the patient going to sleep, and did not return until the next day. I am

of opinion, that if the douche had been again applied within a few hours after the setting in of these pains, in all probability four applications would have been sufficient; however, as a good night's rest was of importance, and all went on favourably both during the very short labour that followed, as well as during the convalescence up to the present period (this is the sixth day, and the patient has not had an unfavourable symptom; her pulse never was above the natural standard, and the uterine tumour subsided as rapidly as in an ordinary labour), there is nothing to be regretted in having to give six instead of four douches.

"I took an exact measurement of the child's head: occipito-mental line measured $4\frac{3}{4}$ inches; occipito-frontal, $4\frac{1}{8}$ inches; occipito-bregmatic, $3\frac{3}{4}$ inches. The transverse measurements were: transverse frontal or bitemporal, $2\frac{7}{8}$, compressed, $2\frac{3}{8}$ inches; biparietal, $3\frac{1}{4}$ inches, compressed, $2\frac{1}{4}$ inches; bimastoid, $2\frac{1}{2}$ inches, compressed, $2\frac{1}{4}$ inches. It was very firm, and remarkably well ossified for a seven-months' child. I first measured it at its fullest size, then made pressure to see to what degree of contraction of the pelvis it must have been subjected in its passage. If we are correct in judging of the dimensions of the pelvis from the inspection of the head, the antero-posterior diameter would be in or about two and a half inches, which is small to bring a living child through; when three inches is considered the smallest dimensions through which a living child, at the *full time* of pregnancy, can pass. Had this been a female, and the head less ossified, it in all likelihood would have lived; but the force required for the delivery was very great, to say nothing of the pressure to which the funis was subjected.

"The following results were obtained from an external measurement of the pelvis: the external antero-posterior diameter, *viz.*, from the back of the sacrum to the front of the pubis, I found to be $7\frac{7}{8}$ inches; the external transverse, *viz.*, from the anterior superior spine of the ilium of one side to that of the opposite, $9\frac{1}{2}$ inches."

Dr. Hardy concluded by observing that he fully concurred in the propriety of repeating the douches more frequently, and at shorter intervals, an idea which was expressed to the Society upon a former occasion by Dr. Shekleton.

MR. TUFNELL read the particulars of an interesting case of "development of the mammary gland in the male," an affection of not very frequent occurrence, and which, as he had been able to obtain a cast for illustration, he thought might not prove uninteresting to the members of the Society. Mr. Tufnell said:—"There are some peculiarities in the present instance which render it different from the majority of the cases heretofore recorded. The man from whose body I took the cast is a soldier of the 60th Rifles, an Irishman, and a labourer prior to enlistment. He is twenty-one years of age, fine, well-made, and muscular, 5 feet 11 inches high, and weighs 12 stone 7 lbs. His chest is broad, and well clothed with pectoral muscles, but has the unusual appearance of the left breast

being developed in form and size equal to that of the female at puberty. The mamma is hemispherical, full, and smooth; when grasped in the hand it can be lifted off from the muscle beneath, and the contained gland then felt, a flattened, conglomerate body, consisting of several lobes, and as large as a small coffee-saucer. The nipple is prominent, standing out about three-eighths of an inch, and when taken up between the finger and thumb, and drawn forward, the lactiferous tubes can be distinctly felt passing from the gland to the nipple. The areola around is well marked, and of a pink colour, much brighter than that of the opposite side. In the cast the nipple does not appear nearly as prominent as it really is; for under the application of the cold plaster to the chest, in taking the mould, it has shrunk and retracted. The opposite breast presents nothing abnormal.

"The case before the Society is one of genuine development of the mammary gland. It is no new growth or morbid production, such as characterize mammary tumours, no swelling or enlargement of the mamilla and its subjacent structures, but true development of the gland, precisely similar to the condition of the organ in its natural state in the female. Like it, too, it began to show itself at the approach of puberty, this man stating that it first attracted his attention when about twelve years of age.

"The points in which this case differs from most others that have been described are, firstly, that it is limited to one side only, instead of both breasts being equally engaged; and secondly, in there being no deficiency or atrophy of the testicles or organs of generation. The penis of this man is, indeed, rather more than usually developed, and the testicles are of large size. The beard and moustache, too, are fully equal to those of men of his age and temperament.

"Examination of this case tends to the consideration of the subject of lactation in the male. The fact of milk having been secreted by the male has been alluded to by Humboldt, Franklin, Dunglison, and Blumenbach; whilst Sir Astley Cooper, in his work on the Anatomy of the Breast, recites a case communicated to him by his nephew, Dr. Young, of a negro in Barbadoes having actually suckled a child. He was the grandfather of the infant, and his daughter having died soon after giving birth to a child, he took it, and nursed and suckled it himself.

"I must say I had always been incredulous upon this point; but, since the inspection of the present case, and that detailed by Dr. Birkett, my mind is changed; and I do believe that it is possible for milk to have been secreted, under the powerful influence of strong mental emotion, such as that of this man's yearning after the offspring of his favourite child, provided the development of breast existed in his case, which we see in the one before us, and which was found in that recorded by Dr. Birkett. The case recorded by the latter is most satisfactory, because, in consequence of its coming under his observation in the dead subject, he was enabled to make a dissection of the parts. Both breasts were enlarged; and on careful

examination each was found to be composed of a very large quantity of fibrous tissue, forming a stroma, and of the terminal vesicles of gland tissue, containing epithelial cells, all the essential elements of the gland."

DR. HENRY KENNEDY read the following brief notes on the anasarca which follows scarlatina:—

" It is now some years since I brought under the notice of the profession a short account of a very severe epidemic of scarlatina which prevailed in Dublin at the time. Amongst the numerous sequelæ which follow the disease, and which it was necessary to notice, was the anasarca or dropsy which so frequently occurs. It appears to me that there are a few points connected with it which call for more attention than they have yet received; and as the subject is one which may fairly be brought under the notice of a Society, constituted as this is, I have thought well of doing so. It will be understood, however, that I am not about to enter into the subject at any length; but merely to make a few remarks of a general character: a sort of commentary, as it were, on some of the symptoms presented by the disease.

" I would begin by observing, that anasarca does not make its appearance, only, after scarlatina. I have seen it after small-pox; and, though rarely, after measles. But above all, I have seen many instances of it after our common fevers; and in some of these latter it proved very troublesome.

" The following case is worth a note. In January, 1850, a girl of fifteen was admitted into Cork-street Hospital, labouring under sore throat and slight external swelling. She had but slight fever, nor could I detect any sign of rash whatever. She was quite convalescent, when she was again attacked with feverish symptoms, and now passed through common fever of a mild character. When convalescent from this, she got signs of anasarca, which increased to a considerable extent, and then subsided. The urine was not albuminous in this instance. It is, however, to be noticed, that whilst anasarca is not confined to the after stages of scarlatina, still it does not appear to be at all so prevalent after any other of the acute fevers, nor does it run to the same extent. Anasarca of the lower limbs is what is commonly seen after acute fevers; but in scarlatina, any or all the cavities may be, and often are, engaged: as is well known to all.

" The period at which the swellings come on is a question of interest. Wells, in his celebrated paper, states it as being about three weeks after the rash has declined. This does not agree with the experience of either former or later years, which I have had. Speaking generally, ten days is a much more common period, at least in Dublin. It must be allowed, however, that, even taking this as the general rule, there are still great varieties. On a former occasion allusion was made to a case of a child three years old, who presented all the characters of the general anasarca which follows scarlatina.

Yet, on inquiry I found that four months had elapsed since the child had this disease. I will not take on me to assert that in this particular instance, the two affections stood in the relation of cause and effect, but simply state my belief that it was so. But if the dropsy be, in some instances, long in declaring itself, in others the very opposite occurs. I have now seen several instances where the swellings appeared within a week of the decline of the rash. Cases have even been observed by others, where anasarca swellings existed at a time when the rash was still visible. One such instance came under my own notice last autumn.

“CASE.—A girl of twenty was admitted, under my care, into Sir Patrick Dun’s Hospital. She had a well-marked rash of scarlatina in patches over the body attended by a very sore throat and some fever; but she had also considerable anasarca swellings of the lower limbs, and in a slighter degree of the upper; her face, too, giving one the idea of being swollen. The urine was slightly albuminous; she got soon well. It was reported of this case that she had scarlatina before: but whether correctly or not, I shall not take on myself to determine. The fact then may be looked upon as certain, that anasarca swellings may coexist with scarlatina, having been observed by others as well as myself.

“What it is which causes such varieties in the period at which dropsical swellings show themselves in relation with scarlatina, is not easy to determine. They are known to occur usually in the milder cases of the disease; and are commonly set down to cold as their chief exciting cause. On the other hand, however, I have seen many instances where such a cause could not be said to have existed; even cases where the patients were not out of bed before the swellings appeared. Something has yet to be cleared up on this point. It certainly is not due to the peculiar character of the renal secretion, of which more again.

“A point which I had occasion to notice formerly has again come so often before me, that it is worth a moment’s consideration; I mean the length of time which may intervene between the appearance of the anasarca and the setting in of serious symptoms. It is quite true that between the first signs of dropsy and the occurrence of danger, two or three days only may elapse. But this, in my experience, is the exception to the general rule; and so it is that the cases are most common in which not only many days, but literally weeks, will pass before any serious mischief declares itself. I have seen five, six, and seven weeks pass over,—the child all the time affected with swellings,—and still no danger show itself till the end of that period. This is a point worth keeping in mind; for otherwise it is very possible we may be thrown off our guard by the apparent mildness of the case. It is curious, too, in connexion with the class of cases I am now speaking of, to observe the very marked intermitting character of the swellings: at times there will be scarcely a trace of them, and again in twenty-four hours they will be more marked than they had been for days. Their flitting character, too,

is at times very characteristic. It is often one hand only which is swelled; then the other, or it may be the face; the lower limbs are the most constantly swelled. This flitting about of the dropsy I have seen as marked as ever it is in acute rheumatism, and it appears to be specially liable to occur in those cases where mischief is about to arise, and usually for three or four days previous to that period. It would appear, in fact, as if this flitting character of the swellings was as critical in the disease under consideration, as it is known to be in other affections.

“ Those cases in which the face is swelled, and more particularly where it is the first part swelled, ever call for the most prompt attention. It is only necessary to allude here to the three ways in which this form of dropsy may become serious, having described them before: first, by the head becoming engaged, as shown by the occurrence of coma or convulsions; second, by the chest being attacked, and here we may have pneumonia, pleuritis, or, more commonly still, œdema of the lungs; and lastly, by the fever being of so severe a form as to be incompatible with the continuance of life. Of these three, the first and the last are, in my experience, the most frequent; the complication of the brain being the most common of all. When the brain is thickened it is curious to observe with what constancy the pupils are dilated. There is no form of brain affection that I know of in which it is so constant; and it often exists for days before serious mischief declares itself; the patient, too, may appear to be so well as to be going about, and even eating. I have seen several instances where, on the same day that they were walking about, convulsions set in. In fact, these cases are very capable of throwing one off their guard, and I have heard of this occurring.

“ Of the pulse in these cases, I have only to say, that as mischief approaches it appears very constantly to fall; it may occasionally be found to intermit, but this is the exception to the general rule; the fall, too, may be sudden and very marked. Thus, a pulse which beat at 120 may, in a few hours, be found beating only from 50 to 60, and at this rate be perfectly regular. There is another point connected with the pulse, and which deserves more attention than it has hitherto received: I mean the difficulty which frequently exists of feeling it at the wrist. This exists, too, quite independent of any swelling. There will be occasion to allude to this point again.

“ The state of the renal secretion has attracted much attention ever since this form of dropsy was specially known; and it appears to myself to deserve still more consideration than it has yet received; for there is no disease I know of in which it presents such varieties, or the study of which is more capable of helping to clear up some of the difficulties which yet surround the affection known as Bright's disease. Speaking generally of the state of the urine, it is, as is well known, lessened in quantity, while it is heightened in colour; and it frequently exhibits that appearance described by Wells as smoky, and which is known to depend on the presence of blood globules. In other cases, again, while it is scanty, it has scarcely been passed,

before it commences to deposit the lithates, and often in such quantity that it will almost get thick. But it is in relation to the presence or absence of albumen that the study of the urine, in this form of dropsy, appears to me specially worthy of note. And here the varieties are truly curious to observe, and, as far as I know, quite independent of the character or intensity of the attack of scarlatina which preceded it. I have seen the urine literally jelly on the application of heat, the case being attended with coma and convulsions, and yet the boy did well; and, on the other hand, where there was no trace whatever of albumen, and still the case proved fatal. Every variety, too, as to the quantity of albumen, may be met, and indeed, has come under my own notice; and what is important, it, in the great majority of instances, disappears entirely. Some years back, albumen appeared to me to be much more frequently present than it has been of late; and this is a curious point for consideration. It is now known that at certain periods deposits of the lithates in the urine are much more frequent than at others; whether such takes place in reference to albumen would be interesting to ascertain. Certain it is, that within the last eighteen months I have not met with it at all, though I have seen a very considerable number of cases in that period. In one instance only was there a trace of its presence: it was the case already alluded to, where the anasarca and scarlatina went hand in hand. Some ten or twelve years back, however, fully a third of the cases presented albumen; and, as already stated, some of them in very large quantity. Yet the cases of late have not been a bit less severe, nor the mortality diminished. In truth, the number of cases which I knew to prove fatal during the past year, and some of these unexpectedly, has been very considerable.

“ Did time permit, I think the facts just alluded to might be turned to good account in considering the nature of Bright’s disease. I must pass this subject by, however, merely noticing two points which may be best put in the form of queries:—

“ 1st. With the knowledge of the facts before us, in connexion with the dropsy which follows scarlatina, ought we not to be most cautious in pronouncing a case to be Bright’s disease; for we have seen that albuminous urine may exist for weeks, and yet not depend upon organic disease, inasmuch as it was got rid of entirely.

“ 2nd. May not those cases of Bright’s disease, in which the albumen is reported to have diminished, be explained by the supposition that the albumen was partly caused by a functional, and partly by an organic cause? But these queries I must leave unanswered at present.

“ The treatment of the form of dropsy under consideration calls for a brief notice. I have an impression on my mind that the nature of the affection is sometimes misunderstood, and that a line of treatment is, in consequence, pursued which may very readily be followed by mischief. Thus I have read of iron being used in these cases. Now I do not say that cases will not be met with where such a remedy

is quite appropriate; but I must say that such cases are very exceptional, at least in my own experience, and that a very opposite line of practice is the one to be adopted. It must be recollected, the class of cases in which this dropsy most generally declares itself. They are very usually but light attacks of scarlatina; the children are very frequently fat and healthy, and there is very constantly present more or less fever, as shown by a furred tongue, hot and dry skin, loss of appetite, &c. Now, in such cases,—and I think I am correct in supposing such to represent by far the majority of those met with,—I believe some modification of the antiphlogistic treatment is the right one. I am quite aware that many gentlemen adopt this to a certain extent, such as by cupping or leeching the loins or head, and other treatment suitable to this. But this I also know, that such treatment has failed both in my own and others' hands. In fact, the treatment I speak of requires to be carried further, and nothing but general bleeding will produce that specific effect on the disease which is needed. The plan, too, of general bleeding may be of essential service even where no very urgent symptoms exist to demand it. The following is a case in point:—

“CASE.—Some time back I was asked to see a boy, about seven years old, who had been affected with general dropsy for one month, and subsequent to an attack of scarlatina. He had been treated by keeping him in bed, by baths and purgatives, but with no marked impression on the swellings, which, when I saw them, were very considerable. Knowing what had been done without avail, and from the experience I had of general bleeding in other cases, I did not hesitate to advise a general bleeding, which was done to the amount of about eight ounces. The other treatment was persevered in; and literally at the end of four days all trace of swellings had disappeared, with the exception of the scrotum and penis. A few punctures made here rapidly drained off the fluid, and the boy made a very rapid recovery.

“The effects of the bleeding were very marked. But it is in cases where much more urgent symptoms exist that I wish to direct attention to; cases, in fact, where there are either convulsions, or where they are seriously threatened, or the chest is much engaged. I have already given the details of some of these cases; but probably allusion to one or two more, which came under my notice during the past year, will not be considered out of place:—

“CASE.—A boy of eleven years of age was attacked with dropsy after scarlatina. I was told a fortnight had elapsed since the rash, a very vivid one, had disappeared. On the morning of the fourteenth day he had complained of his head, and had vomited without any cause. The evening of same day he was seized with convulsions of the right side of the body. This took place about 7 o'clock, and I saw him about one hour and a half after. He was still violently convulsed; the pupils were dilated to the very utmost, while the heart's action was distinctly slow, and somewhat unequal. The pulse on the side not convulsed was, I should observe, very hard to

feel. He was at once bled from the right arm to fully twelve ounces; and as soon as it could be obtained a drop of croton-oil was rubbed on his gums. The effect of the bleeding was precisely what I had seen in similar instances before. The blood flowed so rapidly that the boy's face very soon showed its effects. It became pale, and with this the convulsive movement began at once to decline in intensity, and within an hour all convulsive movement had ceased. Till this took place I was obliged to make a person hold his thumb over the opening in the vein, for otherwise the bleeding could not be controlled.

"There were two or three circumstances occurred in this case which I had seen before, and which appeared to me to support strongly the view of the treatment I would recommend in similar instances. The first was, that the pupils, which had been dilated to the utmost, and not sensitive in any way to the light of a candle, began to contract as the blood flowed, and within two hours were sensible to light. The second was, that as the convulsion ceased, the boy vomited. I have seen this before, and it has always appeared to me analogous to those cases of injury of the brain where trephining is had recourse to, and with the very same result. In fact, in either case, the brain is relieved, and shows it is so by the act of vomiting. Lastly, the effect of the bleeding was shown, in this instance, most remarkably on the pulse. I have already said that in the left wrist it was hard to catch. This is almost constant in these cases. The pulse, in fact, is what is called a labouring pulse. The artery may be quite distinct, and yet the beat almost imperceptible. And that this is the fact appears to be certain; for as the blood flows in these cases, the pulse becomes more and more developed, and the difference between the two periods is really as marked as anything of the kind could well be. When we have the three facts present which have just been alluded to, I take it we have the strongest evidence the nature of the subject admits of, that the line of treatment pursued is the right one.

"It was my intention to have detailed some other instances of this form of dropsy, but time does not allow of it; and besides, what has been stated illustrates those points to which I was most anxious to direct attention. Many points, connected not only with the disease itself, but with its treatment, have been purposely omitted^a; for I must conclude with what I stated, that this paper can only be looked upon as an addenda to what is both well known, and has appeared in print long since."

^a Amongst the rest, the use of mercury.

Case of Sudden Death occurring during the Progress of Natural Labour.

By T. PUREFOY, M. D., Medical Attendant of the Lucan and Leixlip Dispensaries, &c.

A LABOURER's wife, aged 36, married eighteen months, during which period she had been in good health, except whilst suffering from the effects of an abortion during the early months of pregnancy, was taken in labour on the 11th of November, 1854; her labour commenced with the usual symptoms; but during the course of the night she complained of praecordial oppression, and difficult breathing, which symptoms occurred a little time previous to the beginning of her labour, but became much more troublesome during its progress.

At about 6 o'clock on the morning of the 12th inst. she suddenly expressed a wish to see and take leave of her husband, stating her decided conviction that she was dying. Her hands, and the surface of her body generally, now became cold and clammy, whilst she looked pale and exhausted. The husband, upon leaving her, sought for and obtained medical aid in about half an hour after these alarming symptoms had appeared; but during this interval she appeared to the nursetender to faint, and, whilst in this fainting state, expired without a struggle.

Post-mortem appearances.—The subject of examination was tall and well made; appearance of the body normal, except that a small projection appeared upon the superior anterior surface of the uterine tumour, such as might be induced by the rupture of the womb, and protrusion of some part or member of the foetus. Upon examination this was found to be a fibrous tumour growing from the external surface of the uterus, accompanied by a much smaller one near to its base, both being apparently of a mild character. The uterus and its contents were normal in every respect; os uteri dilated to the size of a crown piece; presentation natural, and nothing observable here that could have occasioned death. Abdominal viscera healthy. The lungs were found in a state of recent sanguineous congestion; the pericardium contained about two ounces of reddish-coloured serum, whilst the heart was enlarged to a considerable extent, being in its greatest length about 9 inches, and from 4 to 5 inches in breadth at its base. This organ had undergone fatty degeneration to a considerable extent, with the usual softening of its muscular fibre, and thus being unfitted for its office had failed to fulfil its all-important functions in the hour of need.

As no head symptoms had occurred, the brain was not examined.

Here we have a fresh proof of the manifold and complex dangers which beset "the hour of travail," and a painful instance of the very remote source from whence death may proceed. When it is remembered that a similar catastrophe may occur to the patient of the most experienced and careful practitioner, we shall at once see the interest which this case must have for every practical accoucheur, since under such circumstances a censorious public are ever ready

to conclude that "*the woman was lost*" either through ignorance or neglect. Here abundant proof existed to show that death was the natural result of a certain form of disease over which art had not any direct control.

The only symptoms which might be recognised as indicative of this affection were, *oppressed and anxious respiration, with a tendency to coldness of the surface of the body.* But these symptoms were not at all so urgent as to excite any fear as to the issue of the case, until a very short period before death took place. At the same time, the progress of the labour was in all other respects natural.

Such a combination of symptoms did not afford any reasonable ground of apprehension as to a favourable termination of the labour. Hence we learn, from a fresh source, the absolute necessity which there is to observe the greatest caution in giving an opinion as to the *probable result* of any given case of labour, however favourable existing symptoms may appear.

The small tumour which existed upon the surface of the uterus gave rise to the suggestion that rupture of this organ had taken place, although not very likely to occur at so early a stage of labour, and where the expulsive efforts had been so slight.

The history, symptoms, and progress of the case were not likely to lead to a correct diagnosis of the cause of death,—“fatty degeneration and enlargement of the heart.” A heart, altered in structure, and enfeebled by disease, being called upon to make unwonted efforts, fails in the endeavour; when, the circulation of the vital fluid becoming embarrassed, and finally interrupted at its source, life is extinguished.

Remarks on the Treatment of Gun-Shot Wounds, in connexion with the Reports of the Danish Surgeons on the War of Schleswig and Holstein. By F. BINARD, Regimental Physician at Ghent.

IN the history of gun-shot wounds there is a very important point which has already given rise to numerous discussions; and the subject requires, I think, to be reconsidered in accordance with the new ideas which are at present justly beginning to prevail in reference to the treatment of contused wounds, complicated with more or less considerable injury of the bones. Is amputation necessary in the majority of cases of the latter description, or should numerous exceptions be made to the rule almost universally received since the commencement of the nineteenth century by military surgeons, in wounds with fracture of bones of more or less importance? Such is the question I am about to endeavour to answer, in availing myself of some interesting documents printed in a paper by the chief physician, Dr. Neise, in the *Deutsche Klinik* for 1853, and which is a *résumé* of all the reports published by the Danish surgeons on the wounded, furnished in tolerably large numbers by the war of the Duchies during the years 1848, 1849, 1850, and 1851.

I have lately also read with interest a work on gun-shot wounds

by Dr. Simon, published at Giessen in 1851. This book has caused a sensation in Germany on account of some ingenious and novel views of the author, but especially in consequence of the manner in which he has treated the question of the expediency of amputation in cases of wounds with fracture of the thigh.

It is, above all, in comminuted fractures of the thigh that this question has an especial importance. We know, in fact, that M. Ribes, agreeing on this point with the majority of French military surgeons, maintains that wounds with fracture of the two upper thirds of the femur rigidly demand amputation, since every attempt made to preserve the limb is invariably followed by a fatal termination.

A prominent feature in the statements of the German and Danish surgeons who had occasion during the war of the Duchies to perform amputation of the thigh in consequence of gun-shot wounds, is the great mortality by which they were followed. Thus, Dr. Clemmensen had 10 deaths among 15 who had undergone the operation. Dr. Djourup, in summing up all the cases of amputations of the thigh performed in the hospitals of Denmark, finds a total of 90 amputated, of whom 39 recovered, and 51 died (more than 56 per cent.)

In Holstein, according to Dr. Esmarch, in 128 amputations of the thigh there were 51 recoveries, and 77 deaths (about 60·15 per cent.) Under certain circumstances the mortality has been excessive: thus the principal physician, Dr. Gotz, who published in 1852, in the *Deutsche Klinik*, an important paper on gun-shot wounds treated in the hospital at Delve, reports that the nine amputations of the thigh which were performed there were all followed by a fatal result, due in almost every instance to purulent infection. I may here remark in passing, that Dr. Clemmensen has observed, as well as Professor Velpeau, that purulent infection was more frequent among those who had undergone amputation than among the wounded who, in spite of severe injuries with abundant suppuration, had preserved their limbs.

In viewing facts so unfavourable to amputation of the thigh in gunshot wounds with fracture of the femur, Dr. Simon has broached an opinion entirely opposite to that of M. Ribes, and it must be acknowledged that it is supported by arguments of considerable weight. I am therefore induced to believe that surgeons now acquainted with the advantages to be derived from the employment of the new method (*méthode amovo-inamovible*) in cases of severe fractures of the lower extremities, are, generally speaking, quite disposed to adopt the opinion of the German surgeon, and no longer to consider the dogmatic assertion of M. Ribes, as to the absolute necessity of amputation in fractures of the thigh in any other light than as referring to a last resource, which should not be employed but under exceptional circumstances.

The following is the mode in which Dr. Simon, in the work already referred to, has expressed his opinion on this subject: "Comminuted fractures of the thigh, produced by balls, and occupying

its middle or upper third, ought in every instance to be treated by endeavouring to preserve the limb. In those of the lower third immediate amputation should be had recourse to."

This doctrine, advocating an attempt to preserve the limb in every case of comminuted fracture of the two upper thirds of the thigh, is, perhaps, a little too general; but when we consider the great mortality which almost constantly attends amputations performed at that height, we shall be very much disposed to receive this almost absolute proscription of the operation under such circumstances. We may, in fact,—and present experience seems to prove it,—obtain a more favourable result by attempting to preserve the limb; the question is then reduced to this:—Is amputation of the thigh at this height attended with more danger than the treatment the object of which is the preservation of the limb? My answer would be, that, taking into account the efficacious means we now possess of treating serious fractures of the lower limbs, I think we may adopt this first portion of Dr. Simon's opinion.

But as to the necessity of immediate amputation in comminuted fractures of the lower third of the femur, although this operation is much less serious than that of the two upper thirds, I believe there will still be cases in which we ought not to have recourse to amputation, and where it will be more advisable to endeavour to preserve the limb. I think even that it would not be absolutely necessary to amputate immediately, except in cases where, the fracture of the bone extending to the knee joint, the latter should itself be the seat of considerable disturbance; for the formidable symptoms we should have ulteriorly to apprehend from this dangerous complication are of a nature to give a prominence to immediate amputation as the only chance of saving the patient. In fact, while on the one hand the lesion of the femoro-tibial articulation greatly increases the seriousness of the fracture of the thigh, amputation, on the other hand, performed in this situation is much less frequently fatal than it is when had recourse to at a higher point.

In the war of the Duchies, moreover, the Danish surgeons had many cases in which they succeeded in preserving the limbs when the articulation of the knee had been traversed by a ball, and when the lesion of the bones was not too considerable; this was especially the case also in reference to the elbow joint.

One of the principal reasons formerly adduced in support of the almost absolute necessity of amputation in cases of gun-shot wounds with comminuted fracture of the lower limbs, was the difficulty of transporting the wounded without causing great pain, in consequence of the more or less violent motions imparted to the fractured bones, which were thus exposed to a most intense inflammation. It was especially to a want of means for producing complete immobility of the injured limbs that such occurrences were referable. But this objection no longer obtains to the same degree, in consequence of the efficacy of the new apparatus (*nos appareils amovo-inamovibles*). I have lately witnessed, in a case of severe fracture of the leg caused by the kick of a horse, with what facility a wounded man on whom

one of these bandages was immediately applied can be conveyed in a carriage without experiencing any kind of pain or injury.

The facility of dressing without displacing the limb will be especially valuable in fractures where the splinters are numerous, and which are attended with abundant suppuration, and require frequent examination. I think the padded bandage will afford a decided advantage in this respect, and that it will be particularly useful in comminuted fractures of the thigh, for in such cases permanent extension is out of the question: we must indeed secure the immobility of the limb, but we must also place it in a position capable of being maintained for a long time without inconvenience, and we must therefore never extend it forcibly with the idea of remedying a deformity which cannot be of any importance after a lesion so serious as that under consideration, for if we succeed in preserving the limb we must esteem ourselves very fortunate in having obtained such a result, even at the price of more or less deformity.

The treatment of gun-shot wounds has latterly given rise to many controversies, and experience has happily modified some ideas which were too absolute, and has sanctioned some improvements. It is thus that the practice of incisions intended to prevent constriction (*débridement préventif*), formerly believed to be indispensable, is now acknowledged to be useless; that we no longer lay so much stress upon the extraction of certain foreign bodies, and that we willingly leave to the resources of nature those which could be extracted only by prolonged or violent manœuvres; that trepanning the skull is abandoned as useless or dangerous in the majority of cases in which it was before believed to be directly indicated; that the resection of bones is properly preferred to amputation in the articulations, especially in the upper extremities, where this practice has been attended with so much success that it ought to be adopted as the rule. I think, however, that the question of determining the absolute necessity of amputation in certain cases of fractures of the limbs is one which should be reconsidered. Now that the treatment of this kind of injury has made so much progress, we must necessarily modify some generally received opinions, and seek the testimony of new facts in support of conservative surgery.

The surgery of the day, essentially conservative as it is, should make its powerful influence felt on the field of battle as well as everywhere else, notwithstanding the assertions to the contrary which are repeated in many books, and which are in general based only on very questionable statements of the older military surgeons.

At the commencement of the late war the Danish surgeons performed a much greater number of amputations than they did afterwards, because they had subsequently learned to modify their opinions as to the necessity of amputating immediately in certain cases of wounds with complicated fractures, for example, in those of the knee and elbow, which they at first looked on as imperiously demanding the removal of the limb. Favourable results frequently crowned their novel efforts, and they thus succeeded in preserving many limbs which a short time before should have been sacrificed,

a lesson which all military surgeons will do well to bear in mind when they shall be called on to deal with similar cases.

After these short preliminary remarks, in which I have only touched slightly upon the most important questions, I shall proceed to bring before my readers the work of Dr. Niese, which suggested the foregoing reflections.

OBSERVATIONS extracted from the Reports of the Danish Surgeons during the war, from 1848 to 1851. Translated from the Danish by Dr. Niese^a. (Extracted and translated from the German by Dr. Binard.)

I. Report of the Hospital of Augustenburg, from the 2nd of May to the 1st of November, 1848. By Dr. Clemmensen, Chief Physician:—

Patients admitted during the above period:

Wounded, 485 Danes.	...	Died, 39
,,	36 Germans,	,, 12

Total wounded, 521	Total died, 51, or 10 per cent.
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The number of patients who had suffered amputation either here, at Flensburg, or in the movable military hospitals (ambulances), and who were subsequently treated in the hospital, was,—

Danes, . . . 36	...	Died 12
Germans, . . 4	...	,, 2
<hr/> 40		14, or 35 per cent.

Kind of amputation:

Of the thigh, . . 15	...	Died, 10, or two-thirds.
Of the leg, . . 6	...	,, 2, or one-third.
Of the arm, . . 12	...	,, 2, or one-sixth.
Of the forearm, 6	...	,, 0

Dr. Clemmensen, as well as Professor Velpeau, has observed that purulent infection occurred much more frequently among those who had suffered amputation than among the wounded whose limbs had been preserved, even when their wounds suppurred copiously. Pyemia seemed to prevail in an epidemic form among those submitted to operation between the 1st and the 21st of June.

On Gun-shot Wounds, by Surgeon Drachmon.—In the majority of M. Drachmon's cases, a want of reaction was observed, which sometimes lasted during the entire treatment. It was only when the wound was complicated with the presence of a foreign body that this reaction appeared a little more marked, but it was still less than in wounds of another character. Besides, after the extraction of the foreign body, the swelling, pain, tension, fever, and suppuration, usually disappeared.

^a Deutsche Klinik, Nos. 15 and 17, 1853.

In simple gun-shot wounds the opening made by the entrance of the projectile is usually larger than that caused by its exit. But it is evident that those which are complicated with injuries of the bones will present differences in this respect.

In the majority of cases of wounds of the extremities, complicated with fractures of the bones, M. Drachmon has almost always verified the fact that when recourse was not had to amputation, the great amount of suppuration led to the death of the patient. Although he may subsequently have made some less unfavourable observations on this point, he thinks himself still justified in persisting in his opinion as to the fatal issue of these affections, when it is wished to preserve the parts which have suffered such injuries.

In the tolerably numerous autopsies he has been enabled to make, he observed that bones which were reduced to splinters, as well as the soft parts, presented alterations more considerable than those met with in dead bodies in which gun-shot wounds were experimentally produced.

Primary, immediate amputation affords much more favourable results than secondary or consecutive. The majority (8 in 10) of the wounded in whom amputation of the thigh was performed sank under the effects of pyemia. The author thinks that this result is especially attributable to the mode of operation exclusively employed (the circular method), because that in it the veins remain gaping in the wound. He thinks it would be well, in order to prevent this serious inconvenience, to adopt Bauden's process, which consists in forming an anterior flap. (I am of opinion that Professor Soupart's elliptical operation of amputation of the thigh would be exactly suited to these cases, and that it might prevent the accidents we have to dread from pyemia in consequence of the circular method.—B.)

The following are the circumstances under which amputation is indicated:—Gun-shot wound, with very extensive comminuted fracture; wound of a large joint, particularly when complicated with injury of the bones; hemorrhage from a large artery of the extremities; finally, at a more advanced period, copious suppuration with hectic fever, together with a comminuted fracture, or the lesion of a joint.

Dr. Clemmensen says he has observed that after the ligature of an arterial trunk of an extremity, in cases of hemorrhage produced by a gun-shot wound, gangrene sets in in the injured part, he consequently recommends in such cases the performance of amputation.

The treatment was very simple. Recourse was not had to dilatation of the wound except for the extraction of foreign bodies, or in order to tie a bleeding vessel; incision for the purpose of removing too great tension of the parts was rarely resorted to. At a later period recourse was had to it either to remedy complications, or to give exit to pus.

It was not thought advisable to employ venesection as a preventive measure, but a dose of Epsom salts was usually administered to clear out the *primæ viæ*.

Wounds of the head were especially treated by copious bleedings and the application of ice; these wounds were dilated for the purpose of extracting splinters; the trepan was not employed.

The diet was usually tolerably nutritious. After the cessation of fever, and during the period of suppuration, wine was given. It was observed not only that the wounded bore a solid regimen very well, but also that this, by supporting the strength, had a favourable influence on recovery.

II. Report of the Military Hospital of Faabourg, by Chief Surgeon Schytz:—

From the 3rd of May to the 5th of December, 1848, the number of wounded admitted was 227; of these there were—

Sent to the hospitals,	69
Discharged as temporarily unfit for military service,	26
As entirely unfit,	41
Dismissed cured,	80
Died,	11
Total, . . .	

The above presented the following gun-shot wounds:—

Wounds of the head, . . .	12	Died, 1, Fracture of the base of skull.
Wounds of the neck, . . .	6	
Wounds of the chest, 4 penetrating, and 2 pro- bably so,	10	2 { Balls having traversed the chest and penetrated the vertebral column.
Wounds of the abdomen, } penetrating,	1	1
Wounds of different parts of the trunk, mostly } superficial,	8	1 { Fracture of the lumbar ver- tebræ.
Wounds of the right hand, 16		
, left hand, 5		1 Pyemia.
, right arm, } 32	2	1 amputated, 1 fracture of the neck of the humerus and lesion of the articu- lar capsule.
, left arm, 19		
, right leg, 31		
, left leg, 28		
, both legs, 2	1	{ Excessive suppuration and hectic fever.
, hand,	8	
, arm,	14	
, leg,	21	{ Side not mentioned.

The great operations performed were the following:

Disarticulation of the right arm,	1	Died, 1, Hectic fever.
Amputation of the right arm, .	1	
,, right forearm,	1	
,, right thigh,	1	,, 1, Hectic fever.
,, right leg,	2	
,, left arm,	1	
,, left forearm,	1	
,, left thigh,	2	
Resection of the right humerus,	1	
,, left humerus, .	1	
,, right elbow,	1	
,, left radius, .	1	

Those wounds which had only grazed the skin, and which in other respects presented few of the characters of gun-shot wounds, were, notwithstanding their superficial nature, very slow in healing.

Wounds which formed a complete canal were ordinarily wider at the point of entrance than at that of exit. The eschar did not usually separate earlier than from the eighth to the twelfth day. At this period hemorrhages were frequent; they were, however, most frequently met with in cases where the wounds had been exposed to cold, or in which cold fomentations had been employed. The opening formed by the exit of the ball was usually the first to cicatrize. The duration of the treatment of simple wounds was generally from six to eight weeks.

As the wound was of some days' standing before the patients were brought to the hospital, emollient fomentations were found very useful at the commencement of the treatment.

If the aponeurotic parts caused pain and too much tension, incisions were made, which otherwise were, in the majority of cases, useless. As soon as the eschar was detached and a kindly suppuration was established, the emollient fomentations had to be omitted, because their excessive continuance would have produced too great relaxation of the tissues, and would have increased the suppuration.

As long as the inflammation and fever continued, a strict regimen, and cooling drinks and remedies, were prescribed; when these had ceased and suppuration was established, the patients were allowed to eat as their appetite prompted. In cases of hectic fever, wine and bark were ordered, and a rapid improvement was then observed, especially when the patient could sit up in bed, but above all if he was able to have the advantage of breathing a pure air.

Tetanus was not observed; 3 cases of erratic erysipelas terminated favourably. In 6 patients, after a seven days' stay in hospital, symptoms of hospital gangrene appeared suddenly on the 17th of May; the patients were isolated, and their apartments changed; the wounds were dressed with powdered bark, and washed with a chlorinated solution, and the disease did not reappear.

of Christian, at Copenhagen, from the 29th of July, 1850, to the 20th of February, 1851, by Professor Sommer:—

The number of wounded by fire-arms was 167; the number of deaths was 8.

Among 86 cases of wounds, 17 had but one opening; in 9 of these cases the ball was extracted by another opening than that by which it had entered; recovery took place in between eight and twelve weeks.

In 3 cases the ball was extracted by the opening through which it had entered; recovery took place in four, ten, and fourteen weeks. In 3 other cases the ball was not extracted (it was in the thigh, the leg, and the arm); recovery took place in the seventeenth, twenty-second, and twenty-eighth week.

In 2 cases it could not be determined whether the ball had remained in the body or not, that is, whether it had come out again through the opening by which it had entered; recovery took place in four and nine weeks.

In general, the opening by which the ball entered appeared inclined to close sooner than that through which it passed out, which may be explained by the projectile at its entry acting with more force, and consequently giving rise to less injury than in a deeper situation.

The author, on comparing the different species of wounds he has treated, thinks himself justified in drawing these conclusions:—

1. Wounds with injury of the bones heal more slowly than those which do not present this complication.

2. Wounds of the hand and foot, with lesion of the bones, heal sooner than those of the thigh, arm, and forearm, because the course of the ball is shorter, and affords an easier escape for fluids, and also because the extraction of foreign bodies is more practicable.

3. Uncomplicated wounds of the soft parts of the arm and forearm do not heal much sooner than similar ones of the thigh and leg, although the former present a shorter course, and the arm is more easily retained in a state of immobility than the inferior extremities. It was evident that here, as in wounds of the walls of the thorax, motion interfered but slightly with the healing of those wounds.

4. Wounds of the thigh, with injury of the bone, are longer in healing than those of the same nature in the arm and forearm, because the course of the ball is longer, and the contusion of the parts is more extensive.

The following give some information as to the results which these wounds have finally produced:—

1. Those with injuries of the bones have more frequently caused incapacity for military service than those of the soft parts alone.

2. Wounds of the hand (without lesion of the wrist) form an exception to this rule.

3. Wounds of the soft parts of the knee are not attended with more danger than those of the other soft parts of the lower extremities.

4. Wounds of the soft parts of the thigh heal completely in the

proportion of 2 to 1; those of the leg of the same nature only in the ratio of 1 to $1\frac{1}{4}$ ^a: which may be explained by the fact that, in the latter, great and important nervous trunks are more liable to injury than in the former, and subsequently because the muscles of the leg play so important a part in the motions of the foot. Erratic erysipelas was observed in seven patients during the months of October and November: the cause could not be ascertained. The treatment consisted in the administration of an emetic on the first day, and the subsequent exhibition of sal ammoniac, the affected parts being covered with compresses soaked in cold water. The action of the erysipelas on these wounds was so far salutary that they healed proportionally much more quickly than in those cases in which erysipelas did not occur.

IV. Remarks on the amputations performed during the war of 1848-50; statistics of these operations; by Chief Surgeon Djourup.

Proportion of the Number of Amputations to that of the Wounded.

—According to the lists of admission to the hospitals, the Danish army, during these three years, furnished 6199 wounded. Of this number 243 underwent amputation, that is about 4 per cent.

Proportion of Deaths to Recoveries after these Operations.—Among the 243 subjected to amputation, 147 recovered and 96 died: the proportion of recoveries was, therefore, 60.5 per cent., and that of deaths 39.5 per cent.

TABLE showing the Parts in which the Amputations were performed.

	Number of Times performed.	Resulted in Recovery.	Resulted in Death.
1. Disarticulation of the arm in the scapulo-humeral articulation,	12	8 (66.6 per cent.)	4 (33.3 per cent.)
2. Amputation of the arm and forearm,	89	68 (76.4 per cent.)	21 (23.6 per cent.)
3. Disarticulation of the hand,	1	1	
4. Amputation of the thigh,	90	39 (43.3 per cent.)	51 (56.7 per cent.)
5. Amputation of the leg, .	48	29 (60.4 per cent.)	19 (39.6 per cent.)
6. Disarticulation of the foot,	3	2 (66.6 per cent.)	1 (33.3 per cent.)

It would further appear from the statistical details given by the author:—1. That the number of those who underwent amputation was proportionately less in 1850 than during the two preceding years. 2. That the mortality which followed the operation was more considerable in that year. The number of amputations was greater in the beginning of the war, for at a later period, when the Danish surgeons had the opportunity of observing several cases, in which

^a In other words, the proportion of cases of complete to those of incomplete recovery is, in wounds of the soft part of the thigh as 2 to 1, while in those of the leg it is as 1 to $1\frac{1}{4}$.

they formerly practised amputation, recover, contrary to all expectation, without operation, they more frequently attempted the preservation of parts which had severely suffered. Thus gun-shot wounds produced by balls, which had injured certain joints, such as those of the elbow, knee, or foot, led to operation much oftener in the beginning of the war than in subsequent years, and remarkable results were witnessed even when the joint had been opened, and the bones which help to form it had undergone greater or less injuries. As to the articulation of the knee, Dr. Djourup's opinion is not yet entirely made up with regard to the cases in which amputation should be had recourse to; however, he thinks that when the ball has traversed the knee, and has not caused too great ravages in the bones, the rule should be not to adopt amputation immediately, but that it is better to wait for symptoms which might render it necessary, for he has seen a number of cases in which such wounds have perfectly healed, leaving only an ankylosed joint. The same applies also much more frequently to the articulations of the shoulder, the elbow, and the foot, where amputation is indicated only when the wounds of these parts are accompanied by great injuries of the bones, the presence of numerous splinters, or other important complications. When the ball has not caused lesions of too great severity, the treatment is confined to removing the splinters, covering the wounds, giving the part a suitable position, and maintaining it in a state of immobility; cold affusions are employed until suppuration has set in, when they are replaced by topical emollients.

The most important point is to keep the part in a state of immobility, and to give it such a position that the limb may, when healed, retain its shape and functions^a. In general, considerable swelling and intense inflammatory symptoms come on, suppuration subsequently sets in, and lasts long, giving rise to the discharge of splinters, so that it is long before the ankylosis occurs, which is the inevitable termination in almost all these cases. It is for this reason that in wounds of the knee we should give the leg a rectilinear position, while in those of the elbow the arm should be placed in a state of semiflexion.

The mortality after amputation was greater in 1850, principally on account of the severity of the wounds requiring this operation. This is especially evident from an examination of the several kinds of amputation which have been performed.

During the last year the cases in which amputation of the arm was called for were but few. Thus, in 1848, it was performed on 43 patients; in 1850, on the contrary, it was only adopted in 28, although during that year the number of cases of wounds of the arm was more considerable.

With regard to amputations of the leg and thigh, the opinions, as to the more or less absolute necessity of having recourse to this operation, did not remarkably vary during the entire course of the war.

^a The advantages to be derived in such cases from the new method (*méthode amovo-inamovible*) of which the author does not appear to be aware, are evident.—B.

It was after amputation of the thigh, which is, moreover, by far the most serious, that the mortality was greatest in all the hospitals of Denmark: during the three years it was 56.7 per cent. In the hospitals of Holstein it was 3.5 per cent. greater than in those of Denmark.

The following were the modes of amputation adopted by Dr. Djorup and the surgeons placed under his direction:—

1. In disarticulation of the arm, the oval plan, according to Scoutetten's method.

2. In amputation of the arm, Dupuytren's circular process.

3. Amputation of the forearm was performed by the circular method.

4. Of the thigh by the same.

5. Of the leg by the same.

6. The amputation of the foot was performed once according to Chopart's plan; the patient was eventually able, with the assistance of an artificial foot, to walk with tolerable ease.

Among all the amputations performed by Dr. Djorup, or under his direction, in the ambulances, there was not a single case of consecutive hemorrhage. Among those performed secondarily in the hospitals this accident repeatedly occurred: Dr. Djorup is inclined to allow that the action of chloroform on the nervous system (recourse was had in all the latter cases to the use of this anæsthetic) was not without influence on this result.

V. On the relative frequency of the different gun-shot wounds classed according to their seat and on the proportion of their fatality. By Chief Surgeon Djorup:—

According to the registers of admission to the hospitals during the three years of the war, the number of wounded was 6199, of whom 678 died, and 5521 recovered. Thus 89.1 per cent. recovered, and 10.9 per cent. died; the proportion of recoveries to deaths was, therefore, as 100 to 12.1.

The wounded officers are not included in these numbers; it was thought preferable to class them by themselves. During the same period 252 wounded officers were received into the military hospitals of Denmark, of whom 210 recovered, and 42 died: consequently, the recoveries were 83.9, and the deaths 16.7 per cent., the proportion being as 100 to 19.8.

A fact long known has thus been again demonstrated, namely, that, on the one hand, the number of officers wounded is proportionally large; and that, on the other, their wounds are, generally speaking, much more severe than those of the soldiers. This arises chiefly from the circumstance of the former being most frequently the aim of skilful marksmen.

The number of officers left dead on the field of battle, too, was always more considerable. Thus, at Friedericia there were 25 officers killed and 50 wounded, in the proportion of 1 to 2; at Idstedt 39 officers killed and 97 wounded, in the proportion of 1 to 2.5. On the contrary, at Friedericia the number of non-commissioned officers and soldiers was only 233 killed and 1559 wounded, or nearly

in the proportion of 1 to $6\frac{1}{2}$; at Idstedt the numbers were 402 non-commissioned officers and soldiers killed and 2651 wounded, or about 1 to $6\frac{3}{4}$.

Dr. Djorup has divided gun-shot wounds, according to their seat, into eight classes:—

1. Wounds of the head, in number 443. The recoveries were 369, and the deaths 74; that is, 83.3 per cent. of the former, and 16.7 of the latter. They constituted 7.15 per cent. of the total number of gun-shot wounds.

2. Wounds of the face, 338: 327 recoveries to 11 deaths, or 96.74 per cent. of the former, and 3.24 of the latter. They amounted to 5.45 per cent. of the total number of wounds.

3. Wounds of the neck, 153; recoveries, 142 (92.8 per cent.), and deaths, 11 (7.2 per cent.); constituting 2.45 per cent. of the entire number of wounds.

4. Wounds of the trunk (back, chest, sides, abdomen), 902; recoveries, 673 (74.7 per cent.); deaths, 228 (25.9 per cent.); 14.5 per cent. of the gross number of wounds.

5. Wounds of the nates and genitals, 80; recoveries, 74 (92.5 per cent.); deaths, 6 (7.5 per cent.), amounted to 1.29 per cent. of the total number of wounds.

6. Wounds of the upper extremities (shoulder, arm, and forearm), 1355; deaths, 76 (5.6 per cent.); recoveries, 1279 (94.4 per cent.); proportion to the entire number of wounds, 21.9 per cent.

7. Wounds of the hand (hands and fingers), 412; recoveries, 405 (98.3 per cent.); deaths, 7 (1.7 per cent.); 6.65 per cent. of all wounds.

8. Wounds of the lower extremities; these were very frequent, although most of the combats consisted of the attacks of sharp-shooters, in which the soldiers engaged are more or less concealed behind some shelter, and thus have the lower part of the body under cover. The number was 2516; recoveries, 2251 (89.5 per cent.); deaths, 265 (10.5 per cent.); 41.6 per cent. of all wounds.

From the foregoing figures it will be seen that wounds of the trunk afford the greatest mortality, say 25.3 per cent. Next come those of the head (16.7 per cent.); then the wounds of the lower extremities, the mortality of which is double that of the upper; this observation has already been made in other wars, and is especially true when the bones are fractured.

Dr. Djorup endeavours to explain this fact by the much more firm and intimate union of the lower extremities with the trunk, which causes the wounds of these parts to exercise a morbid influence which is transmitted to, and is more easily exercised in it.—*Nouvelle Encyclographie des Sciences Médicales*, June, 1854.

[We have thought it well to translate at length the foregoing valuable report on the treatment of the wounded in the most recent European war of our time. Presenting, as it does, some important and novel results, it cannot fail to prove interesting and useful to the profession, the more particularly at present, when the correctness of the views put forth can be tested by the experience of our own military surgeons in the East.—ED.]

Note on the Resin of Sumbul. By DR. MURAWIEFF.

Preparation.—The root of Sumbul, cut into small pieces, is to be washed with cold water, the washings being repeated until the water passes off without discoloration. It is then to be macerated for two hours in a cool place, in a solution of carbonate of soda. The liquid having been decanted, the root is to be again washed with cold water, and dried; it is then to be infused in alcohol; to the filtered infusion a little lime is added. The filtration having been repeated, the lime is separated by means of sulphuric acid; the fluid is agitated with animal charcoal, and again filtered. Nearly all the alcohol having been distilled off, the residuum is mixed with three parts of water, the remaining alcohol is evaporated, the extract is then washed with a little cold water, and dried.

The resin thus obtained is entirely deprived of colouring matter, fatty acid, and ethereal oil, and is presented under the appearance of a whitish transparent mass, analogous to amber, becoming soft when pressed between the fingers, burning without residuum, having an acid taste and an aromatic odour, resembling that of sumbul, and somewhat that of musk. The resin probably forms the principal part of the root, in which it exists in great quantity.

The dose of the resin is from the third of a grain to two grains, three or four times a day, in pills, opium being added according to circumstances. In other forms it may give rise to nausea and vomiting, on account of its disagreeable taste. The following are the preparations of sumbul:—

1. *Tincture of the Resin.*—Resin of sumbul, one part; concentrated alcohol, five parts,—a teaspoonful may be given from once to four times a day.

2. *Syrup of the Resin.*—Resin of sumbul, six grains; syrup one ounce,—a teaspoonful from once to four times a day.

3. *Lozenges of the Resin.*—Resin of sumbul, one drachm; alcohol, two drachms; essence of peppermint, five drops; white sugar, ten drachms; mucilage of gum Arabic, as much as may be sufficient to form sixty lozenges.

4. *Paper of Sumbul.*—This is prepared by spreading with a pencil a concentrated solution of resin of sumbul, with the addition of an essential oil or of balsam of Mecca.

Therapeutic Applications.—In chronic pulmonary catarrh; in pneumonias which are slow in being resolved; in the humid asthma of old, anemic, scorbutic, or scrofulous patients; in atonic dysentery; in hypochondriasis; and in leucorrhœa. In typhoid fever the author has not as yet obtained positive results; but he recommends the external application of the paper in chronic rheumatism, in scrofulous swellings, and in scorbutic and scrofulous ulcerations.

Lastly, the author reports three cases of utero-vaginal mucous discharge, in which the resin of sumbul has been used. It appears that it is especially efficacious in nervous, hysterical, debilitated females, who have abused venery, in leucorrhœa consequent on a sud-

den chill, &c. It is less active in women of a lymphatic and soft habit of body; but its most advantageous application is in leucorrhœa, succeeding to acute moral emotions. Under its influence the digestion becomes regular, and many other functions resume their normal vigour.—*Med. Zeit. Russland*; and *Gazzetta Medica Italiana Toscana*, 13 June, 1854, p. 191.

Observations on some Influences prejudicial to Health, to which more advanced Children are exposed in following various Trades. By PROFESSOR MAUTHNER, of Vienna.

IN bringing forward, as I have the honour to do, something from my experience on the unhealthful influences to which older children are exposed in their employment at various trades, it appears to me not out of place first to touch upon those to which the offspring of the poorer class of tradespeople are liable in the houses of their parents.

The poor are generally blessed with children, and are accordingly forced by necessity to make available the physical strength of their little ones: the little boy must early bear his father's burdens; the little girl must take her mother's place in carrying the infants; children of three or four years of age are sent for wood, which the poor buy by the log, for bread, for wine or beer, and other household necessaries: their infant powers are thus too severely taxed, and distortion, a general wasting, and an arrest of development, are the results, for robustness of frame requires time for its development, and cannot attain its perfection if too much be imposed upon and expected from the body in its tender years.

The health of the children of families of the poorer class of tradespeople is also liable to be compromised at home in yet another manner; for in consequence of the confined state of their abodes they are exposed to all the injurious influences which attend the exercise of the several trades. Thus, a case occurred to me some time ago in which a journeyman silversmith beat out a piece of leather, which was charged with an amalgam of mercury and platinum, in his little room, then scraped off the metallic particles and heated them in a crucible in the adjoining kitchen. The vapour of the quicksilver penetrated the room; he and his wife the day after perceived symptoms of ptyalism, which soon passed off, but a violent mercurial action occurred in their child, aged ten years, for which he was brought to hospital, and which he did not get rid of for a long time.

Many apparently accidental diseases of children have a close etiological connexion with the industrial occupations of their parents. For example, the acid linen-weaver's starch (Weberschlachte), with which the yarn is moistened in linen factories, gives off a peculiar disagreeable vapour, which has a very injurious effect on the delicate air-passages of the young. The children of these weavers are subject to attacks of mucous catarrh, and I had the misfortune within a brief period to lose three children of such a family from an affection of this kind. Halfort's observation, in his work on the Diseases of Artisans, page 616, that weaver's starch is injurious to health,

and that a gluten from the flour of the *Phalaris canariensis* might be substituted for it, is as yet unknown to or unheeded by our weavers^a.

In the workshops of poor tailors the exhalations from the workmen squatting together, and the accumulation of old clothes, give rise to a very characteristic and disagreeable smell, which, as it is breathed day and night by the children, who independently of it are weakly, may contribute to the rachitis and scrofula which are so strikingly frequent and severe among the children of this class.

The children of butchers, meat-curers, and pig and calf-killers, suffer mostly from obstinate impetigo, and other chronic eruptions; the children of bakers are usually pale and bloated; those of gilders are subject to chronic inflammations of the eyes, especially of the Meibomian glands, to which the fine gypsum dust, with which the air in their apartments is impregnated, probably contributes. I have seen dangerous accidents occur to children from colouring matters used by their parents in their trades. Thus, in 1838, a child, aged ten years, whose father was engaged in colouring green carpets, was treated in the hospital for poisoning by copper, the boy having for four months assisted in rubbing the colour, which contained verdigris. Periodical cramps, vomiting, colicky pains, trembling of the hands and feet, were the chief symptoms of the affection, which was not removed until after two months' treatment with douche baths, ipecacuanha in small doses, nux vomica, &c.

As I have now arrived at the main subject of my essay, I must first of all observe, that the poor in general are too thoughtless in the choice (if we can term it so) of an industrial calling for their children:—"My son shall be a tailor as I am, or a shoemaker as his godfather." There is not much inquiry as to whether the young man is physically fitted for the occupation, and thus it comes to pass that during his apprenticeship he sickens, and finally recognises in his employment the mortal enemy of his health and of his life.

Girls are often devoted to the manufacture of flowers. This species of industry has the peculiarity that the entire occupation is concentrated in a few months in the year, namely, about the carnival time. At this period they work day and night, and great and small are called upon to make the most extraordinary efforts. The girls are often crowded together in small, badly ventilated apartments, where, by a scanty lamplight, they make fine variegated flowers, most trying to the eyes, and are badly fed and badly paid. Out of so many other cases of severe illness among these girls, I will only mention one of inflammatory softening of the spinal marrow in a flower-maker of eleven years of age (which case is described at length in my work on the Cerebral and Spinal Diseases of Children, page 421). This girl was obliged to work almost day and night with her body stooped, and was during her work exposed to a draught of air. She had formerly lived in the country, and was then

^a In the year 1845 I attempted, by means of popular treatises on dietetics for the artisans in the Trade Society of Lower Austria, to diffuse information on these sources of injury, but they did not attract the desired attention.

always healthy. Three weeks before her admission into the Children's Hospital (26th December, 1843), she was attacked with dragging, tearing pains in her neck, coming on on the slightest motion; she consequently allowed her head to hang forward. The occiput became affected with porrigo and infested with vermin, for which the hair was removed and mercurial ointment was rubbed in. The pains in the neck continued to increase, and she now became paralyzed in both arms; when at last she lost the power of standing on her feet, she was brought into hospital. She was under my care from the 26th December to the 6th January, 1844. In spite of all the measures employed, she died. Dissection showed a yellow, soft, butter-like ramollissement of the medulla oblongata, and an almost pultaceous softening of the rest of the spinal marrow down to the cauda, which was normal; all the organs of the chest and abdomen were flabby; the spleen was pultaceous.

Emphysema of the lungs (?Blähhäls) frequently occurs among the apprentices of goldsmiths; it is developed in consequence of the use of the blowpipe; among the older artisans who have used the blowpipe much and for a long time, this affection is sufficiently common. Young people with weak chests do not bear the inspiration of the dust formed in preparing the coals for the blowpipe, which must be ground smooth; in like manner the dust which rises in sifting the sweepings is injurious to them, and this is a process which falls to the lot of the apprentices in every well-arranged business of the kind at least once a week. Jewellers and goldsmiths work for five months entirely, and during two months for three and a half hours daily, by artificial light, and as in these workshops they frequently make use of globes of water to concentrate the light, the eyes of the young suffer exceedingly. An experienced tradesman assured me, that this is the sole cause of the premature weakness of sight of so many journeymen goldsmiths, which obliges them in more advanced years to confine themselves to branches of the business which produce but slender wages. The apprentices, too, engaged in stone-setting frequently suffer from spinal curvature, in consequence of leaning with the left shoulder low down towards the work-table, while the right must, in manipulating with the tools, be constantly kept much more elevated. Lastly, in the process of melting, the goldsmith is exposed to the inspiration of the fumes of lead, sulphur, sal-ammoniac, and saltpetre, and in gilding by fire (which is now replaced by the galvanic process), to the vapour of quicksilver.

In the year 1841 I brought before the Trade Society of Lower Austria a statement of the various injuries to which children employed in great spinning factories are exposed. The labour which is there assigned them does not, it is true, always exceed the measure of their strength, but its long duration, and the uniformity and quickness required to keep time with the machines, have a strong and exhausting effect. Moreover, these children are often obliged to hasten early at every season of the year to the factories, as they often live at a distance from them, in consequence of which they have scarcely five hours for sleep. "Usually," writes a person accurately

acquainted with these circumstances, "the paid labourer of the factory takes in these children to assist him in his work. It may easily be conceived that these under taskmasters act with stringent severity towards the children, when it is recollected that their parents are absent, and that they consider it a misfortune to themselves if the children are dismissed." What do these children enjoy when they earn weekly three or four florins, W. W. [about 3s. 3d.], which they must bring home to their parents; when they take their breakfast, dinner, &c., at the factory, and at a distance from their family? Factories," he concludes, "are like great bodies, which, in the pursuit of their special objects, always endeavour to make themselves as independent as possible, and to avoid all public control."

In silk factories the male and female apprentices are employed with bobbins; as this occupation requires the standing position, and continues for ten or twelve hours at a time, with the exception of an hour for meals, it is of course very straining and fatiguing. In the cotton and cloth factories, on the contrary, the children sit during the entire time of labour, which continues for thirteen or fourteen hours; they are employed beside the workman as so-called "stickers" at the loom. The fringe-makers' apprentices often suffer in the chest from the pressure of the sternum against the breast-board, as it is called: I myself have observed periostitis of that bone from its continued pressure. In printing factories children of eight or ten years old are employed in applying the colours to the moulds. These children are engaged by the printer, and their lot is not enviable. Thus, in January, 1841, Anna Meier, aged nine years, came to hospital in rags, labouring under a violent attack of pneumonia; she could neither read nor write; had been for a year engaged in applying colours in a printing factory, where she was obliged to attend at 6 o'clock in the morning: she remained all day at the factory, where she ate nothing but bread; at 7 in the evening she went home. The factory was three-quarters of a league from her dwelling; her weekly pay was two florins, W. W. [about 1s. 7 $\frac{1}{4}$ d.]; she was often beaten by her employer. Jos. Müller, a boy of ten years of age, was so beaten on the shoulders with the mould by his employer (the printer), that he came into hospital on the 29th October, 1845, in a lamentable condition with caries of the humerus. In general it is for the severest and most dangerous symptoms that these children apply at the hospital.

Although the physician can do but little towards the removal of the influences prejudicial to health just now mentioned, as they are unfortunately inseparable from the occupations pursued in factories and from the practice of trades, it is, however, certainly useful for him to be aware of them, and to bear them in mind in reference to the diseases of these children.—*Journal für Kinderkrankheiten*, May and June, 1854, page 295.

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PART I.
ORIGINAL COMMUNICATIONS.

ART. X.—*Reflections on the Causes of Dropsy.* By SIR HENRY MARSH, Bart.

(Continued from Vol. XVI. p. 17.)

ONE cause of dropsy, and that by far the most frequent, has been already, in a former Number of this Journal, touched upon. Though only touched upon, enough, it is hoped, has been written to show in what manner the blood becomes impoverished, degraded, and the vessels, particularly those of the capillary system, impaired in tonicity and contractility; and that they, being preternaturally distended, suffer the thinnest or least dense portions of the blood to escape. It has been shown, too, that the interstices of the areolar tissue, and the smooth serous sacs which envelop the internal viscera, are the usual recipients of this thinly albuminous extravasation. The accumulation of this fluid under the skin, and in the cavities, constitutes that variety of dropsy which has been denominated the atonic or asthenic. With all varieties of hydroptic effusion, the function of serous tissue is especially associated; in no form is this more remarkable than in the atonic dropsy. The prosecution of this inquiry leads to the consideration of another

distinct, nay, opposite cause of serous extravasation. It leads to the interesting question, whether inflammatory action is capable of producing similar results, namely, of giving rise to a serous exudation into the areolar tissue, and into the smooth serous tissues. This is a very important question, whether looked upon in a pathological or therapeutical aspect. If it should be found on inquiry that such is the case, it shows how opposite causes may produce precisely similar results; how turgescence of vessels caused in the one instance by atonicity, in the other by a low grade of inflammatory action, issues in both in a serous extravasation into the areolar tissue and serous cavities,—the causes distinct, the results nearly identical. As the causes are distinct, so, experience teaches, should be the treatment. The sthenic and invigorating treatment, so effectual in cases of dropsy not the result of hopeless organic disease in arresting the advance of atonic dropsy, would not only fail in the inflammatory, but would tend to aggravate the disease or even render it ultimately fatal. To reflect a clearer light upon the true nature of serous inflammation, a few remarks, illustrations, and proofs, may not be out of place. The term inflammation is, perhaps, an unfortunate one, because it appears as if designed to limit its application to those forms or grades of the disease which are characterized by heat, redness, swelling, and pain. It is well established that these conditions are not all essential. There is one which, be it much or be it small, is never absent, and that is swelling or *œdema*. There are states of constitution which render it possible that large chronic abscesses may be formed without apparent discoloration, without sensible increase of temperature, and wholly without pain. I have more than once (by mere accident) discovered such in a patient convalescent after a long and extremely attenuating fever. Would not a doubt be raised in the mind as to the applicability of the term inflammation to an abscess of this kind? Equally inapplicable is the word (construed according to its essential signification) to those degrees of inflammation whose extravasations are, it may be, very thinly serous. Yet, with all its objections, the word must be retained. It strikes me that much of the objection might be obviated by the substitution of the compound expression inflammatory or phlogistic disease for the single word inflammation.

The ordinary course of an inflammatory disease consists in a succession of stages.

We shall pass over the primary stages, viz., the change in neural sensibility, which gives rise to an abnormal condition of the vessels,—the contraction of these vessels antecedent to their

dilatation. Our attention shall be chiefly directed toward what may be termed the transuding stages, those which give rise to an inflammatory product. For the convenience of diction these may be termed the thinly albuminous, the densely albuminous, the fibrinous, and the purulent stages. It is only to the two last that the term inflammation is etymologically applicable. If we look into the whole course of a regular acute inflammatory disease, from the time of vascular congestion till it terminate in suppuration, it must, I think, be admitted, that the congestive stage, and that of even the thinnest albuminous extravasation, is as essentially part and parcel of the totality of the phlogistic disease, as are the fibrinous and suppurative stages. These stages merge insensibly into each other; no one can tell the moment when the one ends and the other begins. We must not, however, expect to find these stages succeed each other with an obvious regularity in every variety and form of inflammatory disease; it is far otherwise; many specific diseases run a course very different from that of, say, an ordinary phlegmon.

There are specific diseases, cutaneous and many other (some malignant), which, though of an inflammatory character, run a course peculiar to themselves. There are also a vast variety of causes, external and internal, mental and corporeal, which swerve and perturb from its ordinary career this disease. The influence of poisons, imbibed or inspired, of habitual violations of the laws of nature, of hereditary taints or imperfections, is well known to deflect from their normal career both fevers and inflammations, and the extent to which these same causes perplex the treatment and enhance the danger is matter of daily observation. It is not to distorted or specific cases of inflammation that we must look when the object of inquiry is to investigate the normal stages of this disease. We must rather fix attention upon those cases which, not materially disturbed by extraneous and pernicious influences, exhibit, clearly defined, their progression. The study of the morbid appearances in ordinary uncomplicated acute pneumonia is instructive in reference to the successive grades of the ascending series of an inflammatory disease; though, as before observed, the transition from stage to stage is so gradual and blending as to be destitute of any well-marked line of demarcation. If we look upon a portion of inflamed lung in the first transuding stage, we shall find the following appearances and conditions:—It is swollen; deepened in colour; increased in weight; diminished in tenacity; it is rendered less crepitating; it is surcharged with bloody serum. It pits on pressure precisely after the fa-

shion of a softly œdematos limb or ankle. The earlier the period of the exuding stage, the more readily does it pit under the impression of the finger, and the sooner is the dimple effaced. The natural elasticity of the tissue is impaired; the pit or dimple remains till the equilibrium of the displaced fluid is restored. It is remarkable how largely, in some cases, even at this early period, the serum is intermingled with blood-discs. These altered blood-discs, and the colouring matter of blood, give to the sputa the characteristic rusted, prune-juice or chocolate colour. This is not, however, an essential product of the inflammatory disease. It appertains especially to those tissues and organs which are highly vascular and hemorrhagic, or which are rendered so by antecedent inflammatory disease. The kidneys are abundantly supplied with vessels carrying red blood. In the acute albuminuria, we find in the albuminous urine an abundance of degenerated blood-discs. Yet the inflammatory action, I may, I think, affirm, scarcely ever ascends higher than the thinly and densely albuminous stages. In the acute accompanying anasarca there are few blood-discs, and this because the areolar tissue (the lowest in organization of all the serous tissues) is scantily supplied with red blood. It is, if I may so say, a white-blooded tissue. Had this tissue been as vascular as are the kidneys and the lungs, the inflammatory product had been equally laden with coloured corpuscles. The grade of the inflammatory disease is the same in the acute albuminuria and in the acute accompanying anasarca; but the vascularity is not the same; hence, the one abounds in extravasated blood-discs, and the other has few or none. In the chronic or passive albuminuria blood-discs are either absent altogether or comparatively few. To this, however, there is an apparent exception in cases of constitutional passive hemorrhage with albuminous urine; but these belong to quite another class of diseases. The first transuding stage, then, of the inflammatory disease, as evinced in the inflamed lung, is the thinly albuminous. The progression and advancement of morbid action lead to and establish another and different condition of diseased lung. They lead to the stage or grade of—as it is generally called—hepatization, more properly, condensation. The vesicles and cells at first are partially filled with a thinly serous fluid, mingled, as has been already observed, in varied proportion with altered blood-discs; as the disease progresses and advances, the extravasated serum becomes more and more glutinous and dense, and less and less transparent, till the pulmonary vesicles are filled with albumen, mixed, it may be, with more or less of fibrine. Albumen at this

stage predominates; subsequently fibrine prevails; ultimately, nearly all is purulent matter.

The portion which is advanced in inflammation, to the consolidated or hepatized grade, is more swollen still, more dense, still more easily lacerable, more inelastic, more incompressible than is the lung, inflamed in the first degree. It is impermeable, or nearly so, to air. The cells and vesicles are preoccupied; what had been a moist spongy mass is now converted into a solid lump; when incised or lacerated, a granular aspect is presented. This in childhood, unaided by a lens, is imperceptible,—in more advanced life distinct and clear,—in an emphysematous lung, quite apparent. This condition of lung, advanced to the grade of condensation or hepatization, presents a variety of colours,—sometimes designated the red, sometimes the gray hepatization. This variety in colour depends upon the quantity of altered blood-discs and colouring matter,—the period of the disease; the approach of suppuration; the acuteness of the symptoms; the age of the patient; and admixture and proportion of the pulmonary black pigment; and other causes, organic and constitutional, which are not essential to the course and progress of the inflammatory disease.

This stage or grade of the pulmonary disease is peculiarly interesting, because it coincides in so many points with the acute anasarca dura, and also with the phlegmonoid erysipelas when it has reached its stage of highest condensation, and with many other inflammatory affections of serous sacs and areolar tissue.

It is not my purpose to follow these investigations onward into the fibrinous and purulent stages, because it is with the albuminous stages in this inquiry into the causes of dropsy we are mainly concerned. In the acute albuminuria rarely, indeed, does the inflammatory disease ascend higher than the densely albuminous, and in the acute coexisting anasarca the effusion does not often pass beyond the thinly albuminous.

Hereafter, when treating of the encysted dropsies, particularly the peritoneal, pericardial, and pleuritic, we shall have occasion to notice how much more frequently the smooth, the more highly organized serous tissue, involving the internal viscera, advances into the fibrinous and purulent stages than does the more lowly organized areolar tissue. In pleuritic effusions one occasionally sees pus, lymph, or fibrine, with serum, deposited in the order of their respective densities. In a mass of acutely inflamed lung one may have an opportunity of observing the central parts purulent; the surrounding tissue, densely albuminous and fibrinous; whilst the most thinly al-

buminous occupies the cells and vesicles most remote from the central and highest grade of the disease. In an acutely inflamed lung the affected portions increase in weight and in density as the inflammatory disease rises in intensity. This increase in weight is due mainly to the increasing density of the extravasated fluids. At the very earliest transuding stage the increase in weight of the inflamed lung is comparatively small. This gradual increase of weight in an inflamed lung is a fact of considerable interest.

Turning aside, for a moment, from the morbid appearances to that which may be observed during life, the results are replete with practical interest. For example, if the acute pulmonitis be uncomplicated and sufficiently near to the parietes, the sounds on percussion become more and more dull, till, at length, condensation being completed, all sonority is lost: so, too, we can trace the successive changes in the respiratory sounds from the moment when the small characteristic crepitus of pneumonia is first heard till a breath-sound is no longer audible; or till, as happens in some cases, a tubular or bronchial respiration alone can be recognised. The sputa, too, obscured though they be by degenerated globules and colouring matter, by various glandular and mucous exudations, still undergo a series of progressive changes, till they become so glutinous, dense, opaque, and tenacious, that they adhere to the cup in which they are deposited, so that though it be inverted, still there they cling. All these indicate a gradually increasing density of the products of an ascending inflammatory disease, from the earliest period of the thinly albuminous extravasation onward to the purulent.

Not long since I had an opportunity, in a case of acute bronchitis, of observing the succession of phenomena which has already been alluded to. The sputa, though constantly and abundantly streaked with florid blood, were never obscured to the extent they are in pneumonia: they, closely observed, displayed the gradually consolidating changes of the inflammatory disease, from the most thinly serous to the purulent stages; one passing so insensibly into the other that it was impossible to say when the one began and the other ended, only distinguishable when each had attained its culminating point. At first only a few pus globules appear, ultimately it is the predominant exudation. Similar to this is the transition from the densely albuminous to the fibrinous stage. The serum, originally of a very low density, becomes, as the disease persists and advances, more and more loaded with albumen. Hence in acute albuminuria it is not enough to know that the urine

is albuminous; it is necessary further to know whether or not albumen greatly abounds. Such observations can only be comparative: even so, in diagnosis and in treatment they are of value.

I have seen cases of coryza—of intensely acute coryza—in which the self-same succession of extravasations were displayed with singular distinctness, the acute inflammatory disease not having subsided till pus globules appeared in large quantity. In one case there was collected within the first twenty-four hours of the attack a full pint of thin and perfectly transparent serum,—an excellent example it was of the white blood inflammatory extravasation. These, doubtless, are rare cases, yet such I have seen.

To the practical physician there are few objects of more interest than the investigation of the stages of an inflammatory disease, whether it be idiopathic or traumatic, circumscribed or diffused. In treatment it is needful, indeed imperative, to take into account not only the age, sex, antecedent habits, &c., but also the grade or stage of the disease itself. Upon this pivot much of the adaptation of treatment turns. It is a gradually growing disease,—its growth sometimes very rapid, sometimes very slow,—its progress from infancy to maturity it is interesting to trace: treatment must be modified in accordance with its period of existence. Too many, when the disease was on the confines of, or had already reached, the purulent stage, influenced by the true but vague notion of inflammation, persevere in bleeding (general and topical), in mercury, and other antiphlogistic appliances, to an ill-timed and ruinous extent, thus perniciously undermining the vital energies, and converting what at worst might have been a circumscribed abscess into a diffuse, perhaps a foul purulent infiltration; and this too at a period when it behoves the physician to husband, and, if practicable, to add to, all the surviving force and vitality of the system, with a vigilance not less than that of the miser who watches over and augments his hoarded treasure. No step in treatment can be more unfortunate than a tardy and too long postponed general bleeding. Far different are the results of early and prompt treatment.

There are few diseases which reflect a clearer light upon the treatment of the inflammatory disease generally than pneumonia. When not obscured by other coexisting affections; when so situated as to lie within the reach of distinct aural investigation; when unperturbed in its ascending course and progress, it furnishes the most valuable hints as to the stages and treatment of the inflammatory disease. The auscul-

tatory signs, the appearances of the sputa, the amount of constitutional disturbances, tell a tale of deep and practical interest. It will hardly be considered a digression to make a few passing remarks upon its treatment. The early stage of acute pneumonia—that of vascular congestion ere exudation has yet taken place—does not very often fall under the physician's notice. It corresponds with the dry pleuritis, bronchitis, and the other non-exuding conditions of inflammatory disease. It is generally of short duration. It is, however, a period of importance,—a period when well-directed and active treatment may nip in the bud the growing disease. The character of the cough and of the respiratory sounds demands especial attention. The causes of the disease, and the constitutional disturbances produced, are, at this stage, of the utmost value in establishing the diagnosis. It does, however, happen that the heart's action responds but little, and one may, as I have repeatedly noted, be thus thrown off his guard. Pain, which gives a warning voice, is frequently absent. At this, its early stage, a scrutinizing investigation is required. Promptitude in treatment may at such a moment be of life-preserving value. The ensuing stage of the inflammatory disease, or what has been termed the first transuding stage, is the thinly albuminous. What, then, is the general principle of treatment best suited to the earliest transuding grade of the disease? The case an acute one: the constitutional signs strongly marked: the principle of treatment then is to reduce the force and frequency of the cardiac action. But how is this best to be effected without an excessive reduction of the vital powers? At the earliest period of my professional life the mode of treatment frequently adopted was to repeat venesecti^on again and again at intervals of four, six, eight, or perhaps twelve hours. It is, however, a notable fact, one of no small importance in the conduct of the treatment, that though a full bleeding influences in a remarkable manner all the symptoms, and that though for a brief moment one persuades himself that the disease is really arrested, in truth, in the majority of instances it is far otherwise,—reaction takes place, fever and inflammation return in full force. How is this to be obviated, how prevented? Not certainly by reiterated venesecti^on. Happily there are other means far less destructive of the vital actions, and, to say the least, as efficacious, which may at this, the early period, subdue the heart's action, and prevent the necessity of repeated abstractions of blood. Tartar emetic, judiciously administered, is the remedy which at this juncture is most to be relied upon, not given in the exalted doses which have been recommended, but in sub-

nauseating doses, to be given precisely as one would give it in cases of profuse hemorrhage, not in doses sufficient to produce an emetic effect, but gradually to raise the doses given at short intervals, till nausea be produced, and to keep the patient for a sufficient length of time in this state of semi-nausea: thus will the circulation be kept in subjection, and the necessity for successive bleedings obviated. In some cases great advantage may be derived from topical bleeding. It should follow closely upon the general bleeding, so as to anticipate and prevent re-action. If cupping be dexterously and well performed (otherwise it will only tease and injure), a certain quantity of blood may be abstracted, and this followed by a mitigation of every urgent symptom.

In some cases fever and inflammation are best controlled by relays of leeches, taking good heed that the after bleeding be not injuriously profuse and persisting, as is sure to happen with those in whom the hemorrhagic diathesis prevails, not unfrequently an hereditary imperfection, and pervading every member of the same family. It may, however, as a general rule be affirmed, that in acute phlogosis (for it is only to such cases these remarks apply), the tartarized antimony, elevated to the nauseating point, will supersede the necessity of too frequent bleedings, whether general or topical; further, it is at this early stage of the disease that it is pre-eminently efficacious.

The subduing influence of tartarized antimony is, I believe, enhanced by the addition of six, eight, or ten grains of the nitrate of potash to each dose, both being sufficiently diluted. Such measures, promptly applied, may and often have the effect of entirely checking a further advance of the inflammatory disease, or may cause it to assume the chronic form.

If however, despite all treatment, the acute morbid action persists and progresses, a gradual transition from the thinly albuminous to the densely albuminous and fibrinous stages takes place; then condensed albumen prevails, not, probably, unmixed with fibrine. The vesicles and interstices are now filled with concrete material derived from the blood. Thus, then, the stage of condensation, or, when applied to the lung, of hepatization, is established. When the period of consolidation approaches, then it is that mercury tells with such admirable effect. If there be aught in medicine which merits the name of a specific, one would be disposed to say it is mercury during the fibrinous stage of an acute inflammatory disease in constitutions favourable to its action. Its virtue is in general enhanced, its mode and rapidity of action heightened by the

addition of opium. Hence the efficacy of the calomel and opium pill. There are constitutions so innately intolerant of and unyielding to mercury, intestinal canals so irritable, that the internal application of this potent mineral is rendered injurious or nugatory. In such cases, though the introduction internally of the remedy on which main reliance must be placed be inadmissible, its full action can be attained by external application, except in cases liable to the mercurial erythema, a tendency to which renders the introduction of mercury in *any* form a matter of perplexity. Where such tendency exists, the bichloride, judiciously employed, is more to be relied upon than any other preparation of that metal. By mercurial induction steadily repeated at short intervals, the whole effects of mercury may be speedily obtained.

In cases of extreme urgency I have seen the full effect of mercury rapidly produced on the system by the action of mercurial vapour under the bed coverings, combined with frictions.

It is really curious to observe in iritis the manner in which, under the influence of mercury, fibrine is absorbed, as seen through the transparent humours of the eye. In many diseases the phlogistic action stops short at the fibrinous stage, and does not ascend to the purulent. What nature does, art may successfully imitate, and mercury is the all-powerful agent.

When the gastric and intestinal mucous membranes are thoroughly tolerant, much more rapid effects are produced by the union of mercury and iodine. When well borne, absorption takes place with great rapidity. In the treatment of the acute anasarca dura this remark is of especial value. The same principle of treatment is applicable both to it and to pneumonia in the consolidated stage. There is, however, this difference, the one being an affection of a highly vitalized organ, requires a far more energetic treatment than the other, whose seat is a tissue low in the scale of organization and of function. If the disease be not stopped at the fibrinous stage, if it ascend to the purulent, then the whole system of treatment must be reversed. The sthenic must be substituted for the asthenic; and the vital powers by all possible means (without too abrupt a transition) be sustained. The fibrinous and purulent stages pass, sometimes with great rapidity, the former into the latter.

There are few measures in treatment more pernicious than an ill-timed and postponed bleeding,—“ *bis dat qui cito dat*,”—this aphorism is peculiarly applicable to the timeliness of a bleeding in the phlogistic disease.

If a postponed bleeding be injurious, so likewise is prema-

ture blistering. Before blisters are applied, the force of the heart's action, in an acute case, should be subdued. Blisters applied at the proper time, and in the proper manner, are exceedingly efficacious. To do real good there should be a copious flow of white blood. Perhaps the best practical rule, except in children, is not to remove the blister till vesication appears or moisture flows; vesicles often appear after the blister has been removed, but this cannot always be depended upon. It is highly important, in urgent cases, that there should be a copious extravasation of thin serum. It is not designed that a blister should be a mere rubefacient; by the abstraction of a large amount of white blood it produces a far more powerful effect. It is with blisters as it is with mercury: there are constitutions possessed of some innate obliquity, some idiosyncracy, which resists the favourable action of both the one and the other; of their remedial agency we are either in whole or in part deprived, and other means of checking the morbid action must be resorted to. There are cases of great urgency in which large and rapidly excited vesications produce immediately salutary effects. The application of the acetum cantharidis, of concentrated ammonia, or heated water, will not fail, within a short period of time, to cause copious discharges of white blood, and so unload the internal vessels. There is also another method of attaining this end which, in many instances, I have found singularly useful, particularly in cases which forbid abstraction of blood: that to which I allude is the application of many wide-mouthed cupping glasses, so placed, and over a space so large, as to fill the superficial capillaries with red blood, and to produce numerous and large ecchymoses. The dry cupping, properly and powerfully employed, is certainly a valuable remedy, but in general the operation is so imperfectly performed that it loses nearly all its value.

There are cases of the inflammatory disease in which every drop of blood abstracted is so much taken away from the chances of recovery. I remember well, years ago, an epidemic pneumonia which prevailed in Dublin, and presented, from the very starting point, characters of asthenia so strongly marked, that in few cases was bleeding, general or topical, admissible. Sometimes the symptoms were, for the first few hours, highly and deceitfully acute; very soon the disease degenerated into the typhoid form. Blisters, dry cupping, tonics, bark, appeared to do most good. Exactly alike to the phlegmonoid erysipelas, beginning with ardent symptoms, but soon putting on the typhoid and gangrenous tendencies; in fact pneumonia of this character, either alone, or as a complication of other and

typhoid affections, is a species of internal erysipelas, like to that in which bark is supremely efficacious.

But this is not the form or variety of pneumonia to which these therapeutic remarks have reference, it is to the acute form of the disease, occurring in an unimpaired constitution, that those observations are alone applicable, and they are made with the view of exhibiting, in the most distinct manner, the successive grades or stages of the phlogistic disease, and the general principle of treatment suited to each, and to show how identical the early stages are with the inflammatory œdema; to show how near is the resemblance between the pulmonary œdema of the primary transuding grades, and the œdema or dropsical effusion of the areolar tissue, when both are an inflammatory product. I have selected the lungs for illustration, in preference to any solid viscus, in consequence of their spongy nature, and their analogy to areolar tissue. It would appear, from the most minute investigations, that, beyond the terminals of the capillary bronchi, mucous membrane is not extended, whilst the ultimate tissue, that of the cells and interstices, is serous.

In these respects a well-marked and unmixed case of acute pneumonia is eminently instructive. The proofs derived from the breath-sound, percussion, the character of the sputa, and the morbid appearances, are clear and decisive.

A valuable illustration of the true nature of the inflammatory dropsy may be derived from the contemplation of the effects of an ordinary blister.

After a blister shall have been applied for some time, the irritated surface becomes red, swollen, exalted in temperature, and often painful. It exhibits all the characters of what is termed inflammation. If the irritant be removed sufficiently soon, its action will be merely that of a rubefacient, that of attracting red blood into the dilated capillaries; all will then subside, and no phlogistic product will ensue, nothing, it may be, beyond an increased exudation and exfoliation of epidermis. It is now like the scarlatina efflorescence and erythema, and other perfectly superficial rednesses. If the irritant penetrate more deeply, or if the skin be preternaturally irritable, then there soon appears a phlogistic product. The cuticle is detached with surprising force and raised into conical elevations, of various sizes and forms, under which a thin transparent fluid is encysted, and clearly visible; if, at the earliest period of the formation of these vesications, one of them be pricked with a needle, the serum escapes freely and fluently, indicating how thinly albuminous it is. At this moment, all irritants being removed, the artificially excited inflammatory disease is spontaneously

arrested and dissipated. But this does not always happen. Either from the irritant having been too long in action, or from a peculiarity in the skin or constitution, the phlogistic disease persists and progresses; then the serum becomes viscid, like honey; it also, by degrees, loses its transparency, and assumes a semi-opaque aspect; and sometimes, when, if the serum of the blood be not tinged by bile, or other colouring matter, it shows a somewhat whitish appearance. At this period it increasingly abounds in albumen. Either it is extravasated in this glutinous state, or aqueous particles are rapidly absorbed. If a vesicle be now formed, the fluid will not freely flow, a larger orifice is necessary to give it exit. Here, again, the diseased action may spontaneously cease, and its further development may be arrested—a proof this that there exists in the untainted constitution an innate power—a *vis medicatrix*—capable of staying the progress of disease. Without this, of what avail were treatment? If, however, it be not arrested, lymph or fibrine is more abundantly poured forth, and soon the whole becomes a pus-discharging surface.

It is a well-known and interesting fact, that this pus-discharging surface may, by the daily application of an irritant, be maintained so as to become a permanent issue, and thus are we provided with one of our most valuable remedies.

It occasionally happens, and a disastrous event it is, that a blistered surface will not heal—that it is transformed into a surface of unhealthy and devouring ulcerations; nay, there are states of the constitution—and this is apt to occur in children—so morbid, so depressed, as to cause it to fall into gangrene, thus showing to what an extent the phlogistic disease may be modified, and deflected from, its normal career by infinitely varying abnormal conditions of the blood and system.

The following observations and analyses of the fluids obtained from blistered surfaces were most kindly and promptly made at my request by Professor Apjohn (Professor of Chemistry in Trinity College, Dublin), whose accuracy, truthfulness, and ability in every scientific inquiry are well known and deservedly appreciated.

The object of the analysis is to prove how thinly albuminous the serum may be which is the product of inflammatory action, how low the specific gravity, even below that of the serum of healthy blood.

ANALYSIS No. I.—*Fluid from Vesication produced by a Blister applied to the Surface.*

Nearly opaque, and of a yellowish colour tinged with green; slightly alkaline.

Sp. gr. = 1.017.

Composition in 100 Parts.

Albumen,	5.09
Saline matter and organic matter not coagulated by heat,	1.48
Water,	93.44
	100.00

In the following case the serum was drawn from the blistered surface of a strong young man, of twenty years of age, labouring at the time under pleuritic effusion.

The strongest acetum cantharidis was applied by Dr. Freke in the fluid form with a feather, and so left without anything covering it. About fifteen minutes after the application the patient felt it somewhat smarting him, and the skin had assumed a very slightly reddish appearance. For the next hour and three quarters this redness gradually became more and more intense, and the skin became somewhat swollen or puffy. At the end of about two hours after the application of the fluid, an exudation of serum commenced between the true skin and epidermis. This continued gradually to increase for about twelve hours. Dr. Freke drew from the surface one ounce of a pale, transparent, straw-coloured fluid, the analysis of which, conducted by Professor Apjohn, was as follows:—

Sp. gr. = 1.026.

Water,	91.27
Albumen,	6.72
Organic matter not coagulated by heat,	0.69
Saline matter associated with the latter,	1.32
	100.00

The following note received by me from Professor Apjohn I shall transfer to these pages in his own words:—

“ *Laboratory, March 12, 1855.* ”

“ **MY DEAR SIR HENRY**,—On the 8th instant I received from you two serous liquids, which, in compliance with your desire, I have submitted to chemical examination, with the following results:

"Fluid from an Ovarian Cyst."

"This fluid was of a somewhat dark-yellowish colour, had an alkaline reaction, and a specific gravity represented by the number 1023. Upon analysis it was found to consist of—

Albumen,	6·13
Organic matter not coagulable,	0·32
Salts dissolved in the serum,	0·80
Water,	92·25
	<hr/>
	100 00

"Serum of Blood drawn from the Arm."

"Colour, a clear greenish yellow. Alkaline. Specific gravity = 1030. The constituents were found to be—

Albumen,	9·00
Organic matter not coagulable,	0·31
Salts dissolved in the serum,	0·85
Water,	89·34
	<hr/>
	100 00

"Of this serum 1233 grains were reduced to 621·3 grains by evaporation in *vacuo* over oil of vitriol; and its specific gravity being now taken, it was found to be 1059. The evaporation had been carried on for four days, and it could scarcely have been carried further without artificial heat, which would have endangered the coagulation of the albumen. I may mention here that 1059 is almost exactly the specific gravity which the concentrated serum should possess, on the supposition that its diminution of volume was exactly equal to that of the water separated from it by evaporation.

"Yours very truly,
"JAMES APJOHN.

"Sir H. Marsh, Bart."

In another instance a large blister was applied between the shoulders, which remained on for fourteen hours; caused great heat, pain, and irritation. The effused fluid was collected immediately on the removal of the blister, and was found upon examination to be of the specific gravity, 1020. The patient, a strong vigorous female, aged 50, had been suffering at the time from bronchitis.

I had the specific gravity of the albumen, as it exists naturally in an egg, ascertained, and it proved to be 1036.

Fibrine is not extravasated, at least in preponderating

quantity, at an early period of the phlogistic disease: it belongs essentially to a more advanced period, whereas albumen, from first to last, is never absent. Pus globules float in an albuminous fluid. Though fibrine scarcely differs in chemical properties from albumen, yet, being higher in the scale of organization, we might be led to anticipate that at the time of extravasation it possesses greater density. It stands prominently and conspicuously forward amongst the inflammatory products.

Considering it interesting, in connexion with this inquiry, to ascertain the density of the more highly elaborated products of inflammatory action, I shall make a few observations on the subject of purulent matter.

A great number of analyses of pus are recorded in M. Simon's Chemistry, but in few of them is the specific gravity of that product mentioned. As it is, however, with the density especially we are at present engaged, I have chiefly to direct attention to that point. The lowest specific gravity I find recorded of pus is 1031. In another specimen, taken from a psoas abscess, and analyzed by Golding Bird, the specific gravity was found to be 1040.9.

I quote the following passage from M. Simon's Chemistry, in relation to pus taken from a patient labouring under empyema:—

“ Martius analyzed a purulent fluid obtained from a patient with empyema, from whom 153 ounces of matter were evacuated. It was tolerably thick, of a dirty greenish-gray colour, devoid of odour; had a slightly acid reaction; when heated it swelled very much; it sunk to the bottom in water, but on agitation the two fluids mixed; on boiling it some floccules separated themselves, but no coagulation took place; the fluid, after filtration, was of the colour of sherry, and had a specific gravity of 1111.5; the principal constituents were, water, fat, albumen, extractive matter, gluten, potash, soda, magnesia, lime, ammonia, phosphoric, hydrochloric, and lactic acids”^a.

Some pus of good quality, commonly called laudable pus, was obtained from the suppurating surface of wounds occurring in a stout young man in perfect health. It was examined by Professor Apjohn, and its specific gravity was found to be so high as 1060.

In regard to the foregoing analyses, the points which appear to me of most importance as bearing on the subject under consideration are:—First, the low density of the earliest inflammatory products, compared with the serum of healthy

^a Simon's Chemistry, vol. ii. p. 93. Published by the Sydenham Society.

blood. Secondly, the high density of greatly inspissated albumen; a density to which it never rises during the inflammatory disease, because it is never to the same extent, as in the recorded experiment, deprived of its aqueous dilution. As the disease advances, the serum becomes more and more densely albuminous, till the stage of condensation be reached, in the production of which albumen, as it appears to me, plays a most important part. Thirdly, the density of what is termed "laudable pus" is very remarkable, and adds to the proofs of the gradual ascent in density of the products of a regular inflammatory disease. The pus of a strong and unimpaired constitution rises, as we have seen, to 1060; but pus may be in an utterly broken-down condition, so thin, so diluted, as to be of very low specific gravity. In such a constitution all the inflammatory products, from first to last, will be proportionably low in density.

At a future time, when the subject shall have been more thoroughly investigated, we shall probably be enabled to establish an interesting analogy between the ascending stages of the inflammatory disease, and the progression, from the lowest to the highest in the animal kingdom, of blood as it gradually advances in richness and complexity. We shall also be enabled to deduce the true principle of treatment of incised or lacerated wounds; but these considerations must be reserved for a future occasion.

From the contemplation of some of the phenomena of erysipelatous inflammation, observations valuable in this inquiry may be derived, and these observations have reference to the idiopathic rather than the traumatic inflammation and fever, though I believe every case to be, in one important sense, idiopathic or constitutional.

After a latent period of varying duration fever sets in. The nature of the fever is soon shown by the appearance on the skin of a patch that looks like a deep blush. This blush progressively enlarges, and if on the face, diffuses itself hour after hour either upwards, downwards, or both, and toward to the opposite side. At first the œdema is slight; it, too, increases, and is for a time greatest where the blush first appeared. Whilst the phlogistic disease expands, (I speak now of the severer—the phlegmonoid erysipelas), it also dips deeper and deeper downward; where most intense, it is no longer superficial; it involves the dermoid tissue; in proportion as it dips more deeply, the œdema augments. At length the whole face is vastly swollen, the eyelids especially, and the loose areolar tissue around the eyes. As the inflam-

matory disease becomes more intense, the œdema becomes more dense and incompressible, till it is quite as consolidated as a fully hepatized lung ; the colour of the skin becomes deeper and darker, and the tension greater. At rather an early stage vesications, in all respects similar to those which are produced by a blister, are raised ; the fluid at first is very thin, and becomes gradually more dense and glutinous and less transparent ; but whilst these vesications appear on the surface, a similar fluid is poured out beneath. The phlogistic disease has now penetrated the dermis, and has involved the infra-dermoid serous tissue, and thus the œdema, at first soft, by degrees more and more consolidated, is produced. Now, this is about the period—I mean that of consolidation—when in severe cases incisions (for in slighter cases which scarcely involve the infra-dermoid serous tissues, they are not to be thought of) should be made. In early life I was called to visit a lady suffering from severe phlegmonoid erysipelatous fever of the face and head : already the right eye was totally destroyed, and now the left eye was seriously threatened. I requested the aid of my quondam master, Sir Philip Crampton. He pointed out to me that the period was gone by when the right eye might have been saved : already suppuration had taken place, and the serous tissue was gangrened ; but around the left eye the phlogistic disease was less far advanced. Sir Philip Crampton at once made free incisions—the tension was removed—the extravasated fluids allowed to escape,—suppuration and gangrene were prevented, and the eye was saved. This was one of the many valuable lessons it was my good fortune to have learned from so able and distinguished a master. In those cases of erysipelas in which it is useful to make incisions, it is most advisable that they should not be delayed to a too late period. I have seen great disfigurement of the eyelids and face result from the neglect or postponement of this operation.

This shows how valuable it is to the physician and surgeon to study attentively the successive stages of an ascending inflammatory disease, ascending not only in intensity, but also, as has been shown, in density of the extravasated fluids. Now it is worthy of remark, and it is mainly with this in view that I have referred illustratively to the erysipelatous fever and inflammation, that the well-marked acute febrile anasarca runs a similar course. It is limited at first to a comparatively small space. The extravasation gradually extends in all directions ; usually it begins above and not unfrequently in the face. In some cases it spreads itself rapidly and largely, and the œdema occupies half, or two-thirds, or more, of the whole body ; in some very

rare cases it expands itself universally, and, like the erysipelas infantum, ceases not till it reach the lower extremities. It is the asthenic, the non-inflammatory anasarca, which sometimes (with great rapidity) causes the whole body to be swollen, and this is far and away the most frequent form of anasarca. In the acute anasarca the feet and ankles are œdematos; generally this is the result of gravitation and not of phlogistic action, except when the horizontal position is rigidly maintained. Between the phlegmonoid erysipelas and acute anasarca there is, however, this striking difference,—the tendency of the first is always towards an ascent to the highest grades of the phlogistic disease; whereas the second rarely if ever transcends the densely albuminous; nor is this extraordinary, when we reflect how much more highly organized the dermoid tissue is than the areolar. It may further be observed that erysipelas shows the truly inflammatory origin of its accompanying œdema,—like to many eczematous and exuding skin diseases, inflammatory in their nature, and copiously extravasating dense serum both above and below the true skin. In these chronic inflammations the subjacent œdema is inflammatory. In the dry scaly eruptions rarely is there œdema. They are superficial. In the other, which penetrates the true skin, albumen, sometimes very dense, is effused, often copiously, both above and beneath the skin.

There is a disease popularly called the rose, which, briefly referred to, will aid in casting a clearer light upon the subject under consideration. I have seen many cases of this affection, and have had drawings made of the altered appearances caused by morbid action. It is a remarkable example of an inflammatory disease affecting most intensely the inferior surface of the skin and the subjacent areolar tissue, and not ascending to a higher grade of disease than the densely albuminous. In ordinary erysipelas the primary seat of most acute phlogistic action is superficial, and from thence it radiates downward: the cutis vera is chiefly engaged, and from its high organization is so apt, in severe cases, to run into the fibrinous and suppurative stages. Not so in the disease now being described: it is a less highly organized tissue which is primarily and principally engaged. Its principal seat is beneath the skin.

The rose derives its popular name from the slightness of the blush, which scarcely reddens the surface. It seems to be a sort of periodical erysipelas. It affects most frequently females during the menstruating period of life; frequently its recurrences coincide in time with the catamenia; a few cases are irregular, the majority periodic: so much is this the case, that it may

properly be enrolled amongst the many diseases which are subservient to the law of periodicity. A monthly recurrence of the attack is frequent. It is usually upon the hand and fore-arm that the disease falls. Reiterated attacks render the affected limb more and more swollen and deformed, so as at length to resemble elephantiasis. The skin is rendered coarse, resembling healthy skin when viewed under a powerful lens. Before the extravasation of one attack can be removed by absorption, a renewed effusion is superadded, and leaves an increased œdema; and thus a permanently swollen state of the limb is produced. It pits on pressure, but requires much force to produce a dimple, which is also slow in disappearing. The absorbents carry away first the thinner particles; the more concrete albumen, which is much more difficultly and slowly absorbed, remains, as happens in some forms of *anasarca dura*.

Each access of the disease is usually ushered in by a febrile movement in the system, sometimes distinctly, at other times indistinctly marked. Some time ago I saw a young lady who, having been remarkably handsome, was utterly disfigured by frequent attacks of this disease invading uniformly the face and head. The exaggerated features, the coarse skin, deprived her of every trace of her former beauty. I saw her during the interval of one of her monthly attacks: there was no material disturbance of the general health, and not any emaciation.

A disease in many respects akin to that described, but differing in this, that it is not accompanied by any redness or blush whatever upon the skin, I shall now, as concisely as possible, describe. In the course of reading I have not seen any account of it. As it bears importantly upon the subject of inflammatory dropsy, I shall detail a few cases in illustration. I shall, till I find a better appellation, designate it as the *topical inflammatory œdema*. It is remarkable, that though inflammatory symptoms be often acute, yet the disease rarely surmounts the thinly albuminous stage.

In every instance that I have observed and noted of this inflammatory affection, it had arisen in patients who were at the time and had previously been in a state of constitutional delicacy or ill health, or who manifested signs of gastro-hepatic derangement.

CASE I.—Mrs. B., aged 48, a remarkably healthy-looking person, has ceased to menstruate; was married late in life, and has had three children. After a long and anxious attendance, with many sleepless nights, upon her children, affected successively with severe scarlatina, she was herself seized with fever

of an anomalous character: it was not scarlet fever, it might, perhaps, be designated rheumatic fever. There coexisted with the fever agonizing and erratic pains along the limbs, superior and inferior, the joints not in the least affected. Thus were caused great debility and sleeplessness, and rapid wasting. The convalescence was tedious; when very much recovered she was seized with acute pains in the right leg, which were speedily followed by œdema of the calf. The œdema was circumscribed with tolerable accuracy; it extended along the limb from the knee to the ankle; the infra-dermoid effusion and swelling were very great; throughout its whole extent it pitted deeply on pressure; the skin was not at all reddened or altered in colour; during the first two days, the soreness and tenderness were considerable. These, as well as the shooting pains, passed away when the œdema reached its highest point; the veins were distended. I saw this lady when the local disease was at its height; I did not see her again till after the lapse of eight days; I found her general health greatly restored, and the œdema was fast disappearing.

The whole treatment consisted in perfect rest, the horizontal position of the swollen limb, anodyne fomentations, non-stimulating but nutritious diet, and mild aperients. This appeared to me to be a well-marked case of topical inflammatory œdema.

CASE II.—Mrs. L., aged 46. Catamenia regular. Long-continued mental anxieties have depressed all the vital functions, changed her aspect, and induced chronic disturbances, hepatic and gastric. There was no evidence of renal disease; the urine was scanty, and deposited the lithates combined with purpurine; it did not contain albumen. She came to Dublin in a state of great mental perturbation. The idea had been suggested to her, and had taken full possession of her mind, that dropsy, the immediate forerunner of death, had set in. From this groundless apprehension I was enabled at once to relieve her mind. There was œdema, and that to a very great amount, but it was absolutely confined to one limb, it affected the left limb from the knee downwards. Pain, tenderness, and fever, no longer existed; moderate pressure produced a deep pitting through its whole extent. The issue of this case was a gradual subsidence of the œdema. At the end of a fortnight, the swelling not having quite disappeared, the general health having been greatly restored, the moderate pressure of a well applied bandage, with gradually increased muscular action, removed the atonicity of the vessels, and restored the swollen limb to its normal dimensions.

I saw this lady long afterwards, when her health was in all respects reinstated, and the localized dropsy had totally vanished.

CASE III.—Miss W., aged 23, a delicate, feebly-constituted young person, as were all her sisters; neither in her nor in any member of her family is there any discoverable tendency to any form or variety of arthritic disease. She was attacked with sharp pains in the right forearm. The pains extended from the elbow to the wrist. When I saw her, twenty-four hours from the commencement of the attack, I found the whole fore-arm considerably swollen, very tender; when pressed it pitted. It looked at the first glance as if there were a deeply-seated depot of pus. There was not even the slightest redness of the skin. The arm was placed in a sling, perfect quiescence of the muscles enjoined; folds of lint, moistened with tepid water, were placed around the limb, and the whole enclosed in an envelope of oiled silk; thus the affected part was submitted to the action of a continuous vapour-bath. After the lapse of about fifty hours I saw her; I found the fore-arm much more swollen, pitting deeply on even slight pressure; but pain and tenderness had both passed away: the skin of its natural pale colour. After three days I again saw her; the œdema was much diminished, but the skin was covered with an elevated red papillary eruption in large patches: this was evidently the effect of the moistened applications; these were removed, the surface was sprinkled with fine flour, and french wadding laid over it. The cutaneous irritation subsided, and the œdema was greatly diminished. The only remarkable appearance, after the abatement of the œdema, was an effusion into the sheaths of the tendons of the wrists. Pressure steadily applied and gradually increased has caused the total absorption of the effused fluid. The thinly albuminous was the highest stage of exudation to which the inflammatory disease ascended in this constitutionally feeble young person.

CASE IV.—A gentleman, 32 years of age, came for advice to my house. He was very tall, chest long and narrow, much emaciated, and unhealthily pallid. The semilunar lividity under the eyes was very remarkable and deeply stained. Appetite, strength, and spirits had forsaken him. He said that compared with what he had been he was now a wreck, a ruin. The pulse was small, feeble, not very frequent. Six months of unintermitting illness had reduced him to his present state. The disease began, he informed me, with what was called a rheumatic fever; yet he never had much fever, and that little of only a few days' duration: there had never been any redness

or swelling of the joints. He suffered from erratic pains, often recurring in agonizing paroxysms. From pain in one or other part he has never, from the commencement of his illness, been wholly exempted. His nights were passed painfully and sleeplessly. To procure rest he was compelled to have recourse to full opiates. Much variety of treatment, without any palpable advantage, had been instituted. Only a few days had elapsed after my first interview, when an urgent message led me to go in haste to his bedside. He was half raised in bed, his countenance expressive of suffering the most acute, his respiration incalculably rapid and very restricted. The pain was aggravated by every act of inspiration. In the right side of the thorax the pain was felt most acutely over a not very large space situated about two inches below and to the right of the nipple. Percussion and breath-sound disclosed no evidence of disease, either pleural or pulmonary. The seat of the interior pain appeared to me to be in the intercostal muscles.

In no instance have I witnessed a more perfect okyspnœa^a. Not many hours after I left the house, the whole pain and suffering in the side ceased, and seemed as though it had passed with great intensity into the calf of the right leg: the respiration became perfectly tranquil.

After the lapse of two days, when I next visited him, he was, when the limb was quiescent, entirely free from pain. The colour and expression of his countenance were wonderfully ameliorated. On examining the right limb, where the pain had been for many hours most intense, I was surprised to find that from the knee to the ankle an immense extravasation had taken place. There was not then, nor had there been, any superficial redness; some tenderness remained. Throughout its whole extent it pitted deeply and easily on pressure. The dimples were soon obliterated; no effusion had taken place into the joints; not without pain and difficulty could the limb be moved. The cessation of pain, as frequently happens in acute gout was coincident and cotemporaneous with the copious serous effusion. The calf of the right leg—the principal seat of the soft œdema—was so enormously swollen that it contrasted curiously with the miserable remnant of the calf of the other attenuated limb. In this event terminated the suffering of this patient. The erratic pains ceased; the general health rapidly

^a This word I venture to introduce. A word importing mere rapidity of breathing—a restricted and rapid respiration—we stand much in need of. The word okyspnœa is not intended to express any mode of breathing which demands the active aid of the auxiliary respiratory muscles. The respiration of unmixed pleurodynia is a good example of it. There is a marked difference between dyspœa and okyspnœa.

improved. It is highly probable that the case was one of gout, long lurking in the system, and at length brought to a crisis.

After the lapse of about three months this gentleman called upon me for the sole purpose of triumphantly showing himself in renovated and restored health. As regards the subject under consideration, there is one point worthy of especial notice. It is this, that many, very many weeks elapsed ere the œdema had wholly disappeared; during the whole of this time he walked not without lameness. At length the œdema yielded to tonics, frictions, and well-regulated and gradually augmented bandage pressure, thus showing that the capillary vessels, as already noticed, increased in size, lowered in tone, as it were paralysed, are slow to resume their normal functions; that prolonged is the time ere the exhalents and absorbents act in perfect harmony. It has often been remarked in some instances how slowly the redness left by a blister passes away. The capillaries for a long time receive red blood; a persisting blush remains, and it occasionally happens that in young persons prone to blush, the portion of the skin of the chest where long since a blister had been applied partakes in the blush produced by a mental emotion. Circumscribed by the limits of the long healed blister, a new blushing surface is thus established. This I have remarked in young sensitive females, whose blushes did not, as is the case with some, extend naturally over the neck and chest. I have seen in persons of a very fair skin remarkable instances of a blushing blister. So slowly do dilated capillaries resume their normal and perfect contractility. This pathological fact, when closely looked into, will help to account for the long persistence of many chronic affections primarily inflammatory.

It has been often observed in albuminuria that the urine contains albumen long after the inflammatory stage has passed away. The inflammatory action leaves the capillaries for months in a debilitated and dilated condition, whereby the albuminous constituent of the blood is allowed to escape. There are, doubtless, additional co-operating causes which produce such other changes in the urine as increase in quantity, alteration in colour, diminution in density, deficiency of urea, and other results, for a knowledge of which we are indebted to microscopic observation. But with these we have nothing at present to do; the fact to be insisted upon is the long persistence of albuminuria. I have seen cases in which, for several months after the inflammatory stage had passed away, the urine still continued albuminous, and this without of necessity implying that the kidney had undergone those organic changes

known by the name of "Bright's disease." This is one of the varieties of kidney disease in which the hydriodate of potash, as recommended by Dr. Corrigan, in a valuable paper recently published, tells with admirable effect; possibly by its direct action on the parietes of the capillaries it causes those vessels to contract. There is a marked resemblance in progress between the anasarca and the albuminuria; as acute albuminuria lapses into the chronic, so, in like manner, the acute stage of anasarca subsides, and the disease remains, often for a long time, in the atonic form. I have seen children who have been affected with acute scarlatinal anasarca and with albuminuria continue pallid, depressed, and anasarca, exhibiting all the characters of the chronic form of this disease, and yet ultimately restored to perfect health. But I am anticipating; my object has been to show how slowly the capillary vessels, enfeebled and dilated by inflammatory action, are to assume their normal tonicity.

There are few diseases which reflect a clearer light upon the truly inflammatory nature of infra-dermoid extravasations than gout, of which the following is a good example.

CASE IV.—Mr. —, fifty-six years of age, a member of an intensely gouty family. Earlier in life he had more than one fit of acute gout. His chest was expansive; his muscular development large and well-proportioned; strong in mind and body, and of a vigorous constitution; temperate in his habits, energetic in his daily pursuits; with the exception of rare gouty attacks, enjoying uninterrupted health. When I saw him, I found the change in the whole man, mind and body, painfully great. He was pallid, flaccid, depressed, and desponding; his appetite gone; sleep broken; all the vital functions in abeyance. He informed me that domestic calamities (the nature of which he detailed) had by degrees broken him down. They were of an unusually depressing nature. He further told me that he was firmly convinced that his heart was diseased, and that dropsy had already commenced. The pulse was very feeble, intermitting every third or fourth beat; equally feeble and intermitting were, in every variety of position, the cardiac contractions. Distressing dyspnoea was produced by slight muscular effort; by none more than by the ascent of steps. In his appearance he was strikingly anemic. Furthermore, a copious soft oedema occupied the limb from the knee downwards; nowhere else was oedema to be found; the joints were unaffected; the superficial veins of the affected limb were distended; the skin was colourless, slightly

tender, pitted deeply when moderately impressed; the dimple thus made was soon effaced; motion of the limb was difficult; the size of the calf of the leg, naturally large, appeared exceedingly great, especially when compared with the other limb. This gentleman told me that four days had elapsed since he first observed the swelling, and, to use his own phrase, his heart sunk within him when he found that it pitted. Before he perceived the swelling he had pain, not very severe, below the knee; as the swelling increased the pain abated; it had been more tender to the touch; there had been no redness, no perceptible increase of heat.

When, after a careful and minute scrutiny of the symptoms, I was enabled to convince him that there was not any organic disease of the heart, nor any indication of general dropsy, he seemed like one delivered from a load which weighed him down. Some days afterwards he compared himself to Sinbad in the Arabian Nights' Tales, and said that he had been rescued from the strangling embrace of the old man. Exhilaration, the best of cordials, invigorating treatment, the cessation of domestic anxiety, produced their beneficial effects. He improved daily in health.

After the lapse of about two months I again saw this gentleman. The œdema had nearly passed away; its subsidence was slow. The expression of health was restored to his countenance. The heart had regained its normal force and its rhythm. Exercise was well borne without any abnormal excitement of respiration. This, I take it, was a case of true gouty inflammation, its seat infra-dermoid, but low in degree, as beffited a constitution at the time subdued and depressed in every vital action. The inflammatory exudation ascended no higher than the thinly albuminous. Amongst the many peculiarities and anomalies of arthritic inflammation there is not one more remarkable than this, that the inflammatory disease, fiery and painful though it be, scarcely ever ascends into the suppurative stage. Whether this depends upon a something specific in the disease, or upon the low organization of the tissues primarily and chiefly involved, I will not venture to affirm. So it is, the disease is inflammatory, the extravasation serous,—a proof that serosity, whether thin or dense, is in such a case a phlogistic product. The prolonged latency of gout in the system, its paroxysmal and metastatic characters, are not more striking than is the intensity of the inflammatory symptoms contrasted with the nature of the extravasation. It rarely transcends a certain stage and degree of the inflammatory disease, however hot, painful, and red, be-

the local inflammation. Often the question has arisen in my mind,—Is it possible that such an angry-looking inflammation can end without suppuration?

An exemplification of both the progress of the phlogistic disease and of the true nature of the inflammatory œdema, or localized dropsy, I may be permitted to derive from a case I lately saw of acute variolous fever with eruption. The patient was a remarkably robust, healthy young gentleman, who had scarcely reached his thirtieth year; his habits temperate and regular; active exercises in the open air were his delight. The premonitory symptoms were strongly marked, the rigors severe; the lumbar pains were of a very severe character: these pains which, extending sometimes over the abdomen, I have known to have been mistaken for peritonitis, and treated by copious bleedings, to the infinite ease of the patient at the time, but abstracting a thousandfold from his ultimate prospects of recovery. At my first visit not a vesicle was to be seen; the skin over a large space was already intensely red, swollen, and vascular. At this stage the disease has often been confounded with scarlatina and other efflorescences, yet the diagnosis is not difficult. This represents the non-exuding—the dry—the mere vascular—congestion stage of the inflammatory disease. At my next visit greatly was the aspect of the surface altered: now the skin was studded with elevations, and these pinnacled with minute vesicles, more especially on the upper parts of the body; they were congregated and packed together in myriads; a gradual increase in size of each little phlegmon was signalized by an increased exudation under the transparent cuticle. The first extravasation was thin and transparent; by degrees it became opaque, glutinous, and opalescent, and then faintly yellowish, ultimately purulent. Such, apparent to the eye, are well known to be the stages of the inflammatory disease as exhibited in small-pox; such I believe to be its stages when occurring in the acute form under other circumstances.

In the size of each small phlegmon, in the intensity of the inflammatory action, in the quantity and quality of extravasation, there is a gradational and steady advance. All these changes proceed *pari passu* till the period of maturation be reached. As the pustules advance in size and intensity of inflammation, so do the extravasated fluids increase in density. In no instance is the progress of the phlogistic disease more clearly delineated than it is in the stages of the variolous pustule, not unlike that caused by the action of tartar emetic and other pustulating irritants. That, however, to which in this case I am desirous

to attract attention is the copiousness of the extravasation which took place in those parts of the body where the pustules were most numerously congregated. In the face and feet this was most remarkable. The œdema rose to a higher degree of condensation in the face than in the feet. In the former such was the œdema, such the consolidation, that it was not without difficulty that a slight separation of the eyelids could be effected. Not in the severest form of erysipelas have I seen the face more swollen, more dense, than in this instance. In the feet, though more soft, such was the swelling, that the parents of the young man took alarm, and sent for me in haste, imagining that some disastrous event had occurred. The swelling certainly did exceed in this case aught that on any former occasion I recollect to have witnessed. The swelling of the feet reached its acme about the period of maturation. Both upon the face and feet the pustules were so immensely crowded that it seemed as if they were deprived of space to spread superficially or laterally, and were thus, as it were, compelled to dip deeply downward, and penetrate into the substance of the dermoid tissue, and thus to give rise to the well-known small-pox pitting; for on those parts of the body where space was left for expansion the pustules did not penetrate; neither in these parts was there any remarkable œdema. Where they abounded greatly, where they descended deeply, there the inflammatory œdema reached its maximum. In this case, after desiccation, after every inflammatory symptom had passed away, for fully five weeks the œdema or dropsy, now having become atonic, persisted. Absorption was more rapid in the face than in the lower extremities, and their dilated and semi-paralyzed capillaries recovered their tone more speedily.

Thus in this case the fact already insisted upon—that of the shortness of the inflammatory stage, and the prolongation of the non-inflammatory—was exemplified. In the study of the causes of dropsy this is a principle of paramount importance. Such an amount of solid œdema as existed in this highly acute case I never saw in a case of asthenic, typhoid, or, as it is usually termed, confluent small-pox. In the worst cases of confluent small-pox the inflammation at the bases of the pustules is of so low a degree as to be in some instances scarcely appreciable, and the extravasations at the apices so thin, that they run into each other; and if the purulent stage be reached, the fluid is little else than a few pus globules, floating in thin and perhaps bloody serum. Between the extremes of the highest acuteness and the lowest asthenicity, the gradations are beyond number. The density of the extravasations at the apices, and

of the infra-dermoid, varies in the same proportion—all depending upon the pre-existent state of the constitution and of the blood.

At a somewhat advanced period of the variolous fever it happens occasionally that, the mucous membrane of the fauces being thickly studded with pustules, oedema of the glottis suddenly sets in. The earliest sounds, even remotely resembling croupy respiration, should be immediately attended to; delay in treatment is fatal. The prompt application of leeches and of fomentations saves life. In one case, in which the epiglottis was tense, tender, and swollen, scarification of this organ appeared to me beneficial. This is an example of the true phlogistic oedema, and on this principle only can it be effectually treated.

There is a point of view in which, as an important diagnostic sign, considerable interest is attached to the earliest or thinly serous transuding grade of an inflammatory disease—it is, when superficial, the index which guides the surgeon's knife to the deep-seated depot of purulent matter.

In illustration I shall give some of the particulars of a case which very many years ago I witnessed. I was called up at midnight to see a gentleman who, I was informed, was dying. Almost at the moment of my arrival the late Mr. Colles reached the house. The patient seemed to be about 40 years of age; he was seated in an arm-chair; his cheeks and lips were livid; his hands cold and purple; slowly and laboriously he heaved for breath; he was pulseless and speechless. There was nothing in the fauces or pharynx to account for his asphyxiated state. From the previous history, scantily detailed, we could only learn that for three or four days he had been complaining of sore throat, some difficulty of deglutition and of respiration. He had led a solitary and retired life, and little was known about him. On carefully examining the neck we could discover no clue to guide us, except a slight oedema near to and on the left side of the upper rings of the trachea. The hint was immediately seized upon by Mr. Colles; steadily and deeply he directed his incision downwards. Out gushed a torrent of matter. The revival was rapid. Rarely have I seen the grasp of death so instantaneously relaxed. What a triumph such a case as this, both to diagnosis and to surgery!

I shall here pause in my inquiries. I have already encroached too largely upon the pages of this Journal and the patience of its readers. Before I enter upon the consideration of obstructive dropsey, it is my purpose to endeavour to show that the same causes which give rise to the inflammatory disease in every other part of the body are identical with those which kindle up this same

morbid action in the kidneys, in the infra-cutaneous areolar tissue, and the external membranes of the internal viscera.

The proofs and illustrations brought forward in this paper will find their application when we treat of the acute albuminuria and the acute anasarca—diseases we oftentimes meet associated together.

ART. XI.—*On Cases of Stricture of the Urethra, in which the use of Perforating or Cutting Instruments is expedient or desirable.* By JOHN HAMILTON, Surgeon to the Richmond Hospital.

AMONG the first of these cases I would place strictures at the orifice of the urethra. The usual cause of the orifice of the urethra becoming contracted is by the hard cicatrization of a bad syphilitic sore. A certain amount of destruction from a phagedænic chancre takes place, which ends in a hard cartilaginous cicatrix, through the centre of which passes the contracted urethra, the contraction generally extending from the orifice a quarter or half an inch down. It constitutes a stricture of a formidable kind, though many from the superficial situation might consider it easily manageable. It becomes daily narrower and narrower, until it is reduced to a mere pin-hole, admitting with difficulty the point of the small lachrymal probe. Before long, the urethra, behind the obstructed orifice, becomes dilated, so as to be, at last, three or four times its ordinary caliber. Now this has a most disagreeable effect, for after the bladder, in the effort to pass water, has been quite emptied, the dilated urethra remaining full, and not being acted on by the *vis a tergo* from the action of the bladder, and only imperfectly and partially affected by the muscles of the urethra, continues dribbling slowly away. In every case of stricture, when there is dilatation of the urethra behind it, there is more or less of this dribbling, constituting, in a minor degree, the well-known symptom in stricture, that after the patient thinks he has passed all the water, some will yet come away. But in these cases of contracted orifice, the dilatation is of the whole urethra, and to such an extent, that the quantity of urine contained in it is very great, while the point of exit is so small as to make an imperfect outlet, and so cause the urine to be constantly dribbling away; the dilated urethra is scarcely emptied before a fresh action of the bladder refills it. This incessant dribbling constitutes one of the most distressing states possible. The patient's clothes and bed are saturated with urine,

while the penis, scrotum, and inside of the thighs are red, irritated, and excoriated by it. In these hard cartilaginous contractions of the orifice of the urethra, dilatation of the stricture will be found a very tedious and unsatisfactory process. It is infinitely better, directly a director can be got in, to pass a narrow, straight, sharp-pointed bistoury on it, and divide the whole length of the stricture. I can speak decidedly in recommending this treatment, as I have had a large number of such cases under my care. It is most gratifying to find how rapidly the after dilatation of the stricture effects a cure.

CASE I.—Richard Hyland, aged 26, was admitted with bubo. He had besides a much more serious complaint, a contraction of the orifice of the urethra, in consequence of a chancre in that situation, got twelve months since. The glans penis presents a small circular excavation around the orifice, showing where the ulcer had been. The opening of the urethra in the centre of this is so contracted, that with great straining and pain, shooting back along the passage, the urine only flows drop by drop, and a small director can barely be got through it.

August 23rd. Mr. Hamilton introduced the small director, and with a curved bistoury divided the stricture, cutting about half an inch of the end of the urethra. A conical bougie was passed, and left in two hours, and this was done daily. On the 28th the report says that he passes water freely, and a No. 12 gum-elastic catheter can be introduced. He was dismissed a short time after, with directions to pass the conical bougie daily.

CASE II.—Stricture of the Orifice of the Urethra, caused by an extensive Phagedænic Ulcer.—John M'Keon, aged 26, was admitted January 18, 1851. He has lost half the penis by chronic phagedæna. On the face of the stump appears a nodosity of a dull red colour, and thinly skinned over, being the spongy portion of the urethra, behind which is the puckered orifice of the urethra, small and rather excoriated, and so contracted, that the stream of water is little larger than a needle. As the urine is being passed, it accumulates behind the obstruction, and fills the urethra to distention, and after the bladder has ceased to act, urine continues dribbling away, troubling him very much, and keeping the front of his clothes saturated with wet. After having made out the orifice of the urethra clearly, on a narrow director, I slit it up freely, and at once began the dilatation by conical gum-elastic bougies. At the end of a month I dismissed him, No. 12 catheter passing into the bladder. He was desired to introduce a conical bougie twice a week into the orifice of the urethra, to preserve its patency.

CASE III.—Stricture of the Orifice of the Urethra from Chronic Phagedænic Ulceration.—Patk. Tully, three months discharged from the army, was admitted into No. 5 ward, for difficulty in passing water, the result of former phagedænic ulceration, which has entirely removed the glans penis; the orifice just admits a probe, but considerable cartilaginous induration can be felt for half an inch along the urethra.

He is, moreover, severely affected with bad tertiary symptoms. Patches of pustulo-crustaceous eruption over the trunk and extremities, soft nodes on the tibiæ, pharyngeal sore throat, and tubercular syphilitic sarocele of both testicles.

He contracted the venereal disease six and a half years ago in India, extensive phagedænic ulceration of the corona glandis and prepuce, which took five months to heal, and not till it had eaten away both glans and prepuce.

Mr. Hamilton ordered hydriodate of potash, five grains morning and midday, in decoction of sarsaparilla, and eight grains of blue pill every night.

October 24th. Mr. Hamilton divided the orifice and constricted portion of the urethra with a small bistoury on a director, and afterwards introduced a conical bougie, to be left in for an hour. The constricted part seemed quite cartilaginous, and offered considerable opposition to the incision, but there was little bleeding.

25th. Mr. Hamilton was not quite satisfied that the incision of yesterday had gone through the entire constricted part of the urethra; he, therefore, enlarged it. A conical bougie went in with the greatest ease, and was left in an hour.

November 7th. His gums were slightly touched by the mercury a few days ago, since when he has taken only one pill. The testicles feel almost healthy, and all the other symptoms are proportionably improved. He now complains of comparatively little difficulty in passing water. Soon after, the testicles got quite well, and the improvement in the man's general health was remarkable. A bougie, No. 11, could be readily got into the bladder. He was dismissed, and desired to pass a conical bougie twice a week three or four inches down.

Somewhat parallel cases, as far as treatment by dilatation goes, are those strictures which are formed at two or three inches from the orifice, in the penis portion of the urethra. They are hard, elastic, and can be felt, when a bougie is passed, like hard rings round it. Every surgeon knows how very difficult they are to treat by simple dilatation; what you gain in the increase of size of the instrument to-day, you are disappointed to find a

corresponding loss a few days after; and at the end of many weeks scarcely any substantial improvement is effected, either in the patient's power of passing water, or the size of the bougie. They are more rapidly treated, and with more persistent improvement, by division, not by an external incision, but by dividing the firm substance which constitutes the constriction, from within. This, I believe, is best accomplished by M. Civiale's instrument.

CASE IV.—Patrick Sisson, aged 32, was admitted into the Richmond Hospital February 10, 1854, with a tight cartilaginous stricture of the urethra, about three inches from the orifice, accompanied by constant stillicidium urinæ, rendering him very miserable. Five years ago he had gonorrhœa and chancre at the same time, and was cured of both in this hospital. A year and a half ago he first began to experience difficulty of micturition, followed by constant dribbling away of his urine. He attended at another hospital, but derived little benefit by the introduction of bougies.

February 14th. With great difficulty No. 3 gum-elastic catheter was passed through the stricture into the bladder. It was fastened in.

15th. He had a severe rigor yesterday, followed by headache and profuse perspiration; and at 4 o'clock this morning the catheter was removed.

This method was tried again on two occasions, and even the period reduced to two hours, during which the catheter was retained, but it was either followed by a rigor or such urethral irritation, that I had to give it up. I then tried the use of conical bougies; and, finally, of metallic instruments—silver catheters. A certain amount of benefit resulted; the stillicidium entirely ceased; I could get No. 4 catheter into the bladder, but the stricture was so excessively tight that much force was required to get through it, and there was the utmost difficulty to withdraw the instrument. The stricture could be felt by the finger outside like a hard ring of cartilage round the catheter.

After he had been in hospital six weeks without decided impression having been made on the stricture, No. 4 silver catheter being still the largest instrument that could be passed, and that with difficulty, I resolved to divide the stricture, which I effected with Civiale's instrument. The operation was painful, but the immediate effects very striking: a No. 8 catheter was introduced immediately after, and secured in the bladder.

March 23rd. He suffered no pain since, and was able to bear

the catheter in the bladder for twenty-four hours without any inconvenience. It was again introduced and secured in.

24th. He kept the instrument in since yesterday; it was withdrawn this morning, and not introduced. He is able to pass his water in a full stream. There is some swelling about the seat of the stricture.

27th. Greatly improved; says he feels as well as ever he did; passes water freely, and in a good stream. No. 8 catheter passed easily. He remained in till April 1st. I could then pass in No. 11 silver catheter readily, and he passed water in a full stream. He was dismissed, and directed to pass a conical gum-elastic catheter, about No. 9, occasionally.

The instrument used in this case was M. Civiale's, which is admirably adapted for the purpose of dividing those elastic, ring-like strictures most commonly met with at the penis portion of the urethra, and which so obstinately resist dilatation. There are two sizes—the smallest I think the most useful, as in performing the operation the instrument must be passed through the stricture, cutting as it is withdrawn from behind forwards; the depth of the incision can be regulated with great nicety. It is manufactured and sold by M. Charrière.

In the following cases the stricture was perforated.

CASE V.—John Shortall^a, aged 42, was admitted into No. 5 ward, with cartilaginous stricture of the bulbous portion of the urethra. He could only pass water drop by drop; but a far more distressing thing was a constant dribbling away of the urine, keeping him in a wretched condition, the bed-clothes saturated with wet, and the prepuce and inside of the thighs all excoriated. The stricture was so tight that it would not admit the point of the smallest instrument.

Twenty years ago he had gonorrhœa, which was cured without injections. He first suffered from symptoms of stricture ten years since. He has been in different hospitals, and several times was nearly cured, but when instruments were left off he soon became as bad as ever again.

After having passed bougies down to the stricture for several days, Mr. Hamilton perforated the stricture with Stafford's instrument; a No. 3 silver catheter was then passed into the stricture, but not through it. There was a little hemorrhage after the operation, and retention of urine for a few hours, relieved by a hip-bath. Dilatation of the anterior part of the stricture was effected by the daily passage of conical bougies,

^a Reported by Mr. Lloyd.

but no complete way was made through it till after the third use of Stafford's instrument, when No. 4 gum-elastic bougie went readily into the bladder. He was desired to keep it in two hours.

The next day after the passage of the gum-elastic bougie Mr. Hamilton passed in No. 6 gum-elastic catheter, which was directed to be kept in. There was no further trouble after this. Either a gum-elastic or a silver catheter was passed every second or third day; and two months after admission he left the hospital, passing water in a full stream, and a No. 11 catheter going easily through the constriction.

In this case the stricture was of some extent, and so close that I found, on making the first attempts at introducing an instrument, its point resting against the cartilaginous obstruction, without entering any way into it. In such a case, therefore, of impermeable stricture, it appeared fair to use Stafford's perforator. I might, no doubt, by steady, persevering efforts, have finally reached the bladder without having to resort to this not always safe means of treatment; but it would be necessarily uncertain, and very tedious. The state of the patient, from the constant stillicidium, was most distressing; nor should it be forgotten that in similar cases, during the long interval before we succeed, a mischievous action is going on in the part of the urethra behind the stricture, which may lead to inflammation, ulceration, and abscess; the urine thus making its way to the perineum or scrotum, and urinary fistula be the result.

In another case, where the symptoms were less urgent, I did give a long trial to other means before resorting to perforation.

CASE VI.—A healthy-looking man, aged 40, was admitted into No. 9 ward, July, 1850, with the usual symptoms of stricture of many years' duration. I detected one of cartilaginous hardness at the bulbous part of the urethra, impassable to any instrument. During five weeks I made no impression on this stricture; the stream of water continued remarkably small, with some frequency, in spite of the use of every variety of instrument, catgut bougies, gum-elastic and silver catheters, &c. Being therefore fully practised in the seat and nature of the obstruction, I resolved to try Stafford's perforator. With it I pierced the stricture, and *immediately* after passed a No. 6 silver catheter into the bladder. It was at once succeeded by improvement, particularly as to the frequent desire to pass water. The further progress of the case was most satisfactory. The constricted portion of the urethra was in this case, no doubt, of small extent.

A still more striking result from the use of the perforator is, when we have to deal with an impassable stricture with retention of urine. Whatever objection might be fairly made to its use in other cases, few surgeons would refuse its aid in relieving an urgent case of retention.

CASE VII.—A man of the name of Townshend came to the hospital, March 19, 1850, with retention of urine of two days' standing. He was small and thin; and the outline of the distended bladder, as high as the umbilicus, was very remarkable. He had stricture for fourteen years, caused by a blow of a turnip on the perineum.

I passed first a gum-elastic catheter, and afterwards one of German silver, No. 4, but could not get through the obstruction, which felt of cartilaginous hardness, just behind the bulbous portion of the urethra. Examined with the forefinger in the rectum and the thumb at the perineum, the hard stricture portion felt small, about a quarter of an inch. The cat-gut bougie and silver wire were tried, and afterwards the hip-bath, and the small silver catheter again, but the only result was that he passed a tablespoonful of bloody urine in drops, with great straining.

The case was urgent: ordinary means had failed; in consultation, therefore, it was decided that after a trial of the perforator, should it fail, puncture above the pubes should be resorted to.

I passed the straight instrument of Stafford down to the stricture, and, guiding with the finger of my left hand in the rectum, I perforated for about one-third of an inch; I then tried the silver catheter, and it went through the stricture readily. Three pints of bloody ammoniacal urine were drawn off, containing also a little curdy pus. The silver catheter was withdrawn, and a No. 8 gum-elastic one introduced and fastened in, but the irritability of the bladder and urethra was too great to bear it longer than a few hours; indeed, it soon became apparent that the stricture was the least of his ailments, and though the immediate danger of the retention was removed by the use of Stafford's instrument, yet deeper-seated organic disease of the bladder and kidneys would baffle the resources of art. He lived for six weeks, and died worn out by frequent rigors, diarrhoea, and frequency of passing urine, which was bloody, purulent, and alkaline.

A post-mortem examination of the body showed extensive organic disease: the prostate was converted into a membranous bag containing turbid urine; the bladder intensely inflamed, the walls thickened, and a large pouch at the lower fundus;

the kidneys both presenting specimens of the yellow granular degeneration of Bright; the left enlarged to more than twice its usual size, with dark-purple spots of congestion, filled with pustules. One of these spots was so dark and livid that gangrene seemed impending.

The only good effect of the operation in such a case as this was to prolong life.

I am one of those who think where we can accomplish the cure of stricture by dilatation with catheters or bougies, metallic or gum-elastic, we should be very slow indeed in resorting to perforating instruments; the only plea for their use being cases where time is of great moment, or the symptoms requiring relief are distressing, as in the first of these cases (Shortall's), or urgent and dangerous, as in the last (Townshend's). When the stricture is in the penis portion of the urethra, and can be felt and fixed by the fingers, so that the point of the instrument is certainly in the centre of the obstruction, perforation is easy enough; but not so when in the perineal portion, as in both these cases: in such, the finger in the rectum will be found a valuable guide to the instrument. The operation is not always innocent, smart hemorrhage sometimes following the puncture; and I remember, when a student, seeing a case in which inflammation and suppuration of one of the testicles ensued after the perforation of a stricture about three inches down. We should therefore be slow in resorting to this treatment, but yet not reject it altogether, as certain cases will from time to time present themselves when it will be found very valuable. A thoughtful experience in the use of catheters will lead to such an amount of manual dexterity that few strictures will present themselves through which an instrument cannot be got, sooner or later, into the bladder, and a resort to Stafford's perforator will rarely be required.

ART. XII.—*On a Peculiar Black Discoloration of the Skin of the Face^a.* By J. MOORE NELIGAN, M. D., M. R. I. A., Fellow of the College of Physicians of Ireland, &c.

If the interest of a disease is to be judged of by its rarity, that which I am about to describe is assuredly among the most interesting; for but very few examples of it have been recorded in the annals of medical literature; and this must be ascribed to

^a Read at a meeting of the King and Queen's College of Physicians in Ireland.

the infrequency with which it occurs, as, from the remarkable disfigurement which it produces, it could not otherwise have escaped observation. Yet sufficient cases have been noticed to enable us to recognise the disease when seen, and to draw some conclusions as to its nature and pathology.

The most interesting report of this singular affection which has been hitherto published, is to be found in the 28th volume of the *Medico-Chirurgical Transactions* of London, from the pen of the late Mr. Teevan, and it possesses the advantage of being illustrated with an excellent coloured lithograph. The case was one which had been under the care of Dr. Read of Belfast, and which accidentally came under Mr. Teevan's observation. It was that of a young lady, aged 15, in whom there was a deranged and insufficient state of the catamenial secretion, with the usual accompaniments of pain in the chest, and dyspeptic symptoms. After these symptoms had continued for some time, "a complete blackness settled around both of her eyes, and partly upon the forehead"^a. On trying to wash off the stain, the surface of the skin on which it was present was found to be so sensitive and painful that the patient desisted from the attempt, nor was it again repeated until the medical men who were consulted in London, having expressed their belief that the young lady was deceiving them, she allowed the black matter to be washed off with soap and warm water, so as to leave the skin unstained. The exudation over the surface, however, recommenced shortly after, and in from five to six hours covered, as before, the entire forehead and the upper and under eyelids of both eyes, being of a jet black colour. Local applications, so far from being serviceable, proved rather injurious in this case, having on two occasions produced an attack of erysipelas of the face; and the discolouration eventually disappeared in three months, when the general health was restored completely by constitutional treatment. In a communication with which Dr. Read kindly favoured me in the month of November last, he states that the disease never returned afterwards.

Another well-marked example of the disease is reported in the *Philosophical Transactions* by Mr. Yonge, as having occurred in the year 1709, in a girl residing at Portsmouth. She was sixteen years of age, and had never menstruated. In about six months it began to disappear, or rather not to be exuded so freely, after being removed by washing; but the final result is unfortunately not given.

^a See Dr. Read's *Observations* in the fourteenth volume of the *Dublin Medical Press*, p. 204, in which the history of the case is more completely given.

For an opportunity of seeing the following case I am indebted to Dr. Quinan, physician to the Donnybrook Dispensary; the mother of the girl, who is the subject of it, being the caretaker of the dispensary house, he has had continued opportunity of witnessing the disease from its first appearance to the present time (March, 1855), and he has kindly favoured me with his notes of the case.

Eliza D., aged 21, unmarried, a dressmaker, of an indolent disposition, and pale, leuco-phlegmatic habit, had been always in very good health until about two years ago, when her catamenia, which had appeared regularly before that time, suddenly ceased altogether. Shortly afterwards, a large patch of erysipelas made its appearance on the right side of the body, and although it at first disappeared very soon, yet it returned at each monthly period, and its duration was prolonged every time. For eleven or twelve months this patch of erysipelatous redness continued to appear and subside at the monthly periods,—the menses being altogether suppressed,—each eruption of it being ushered in with fever, malaise, and a good deal of sickness; and after continuing for three or four days, the redness gradually subsided. About seven months ago she was, for the first time, attacked with severe cough, unattended with any symptoms of bronchitis. Having been then seen by another medical gentleman, she was ordered small doses of tartar emetic, from an idea that the redness on the side was pure erysipelas; this caused a fearful attack of nausea and vomiting, which produced so much weakness and exhaustion that she was unable to continue the use of the medicine. From that time to the present she has been subject to sickness of the stomach, which occurs regularly half an hour after the first meal has been taken each morning, and is attended with vomiting of the food which had been swallowed: the sickness does not recur again until the same period of the next day. Her cough became very troublesome; her appetite failed; and her strength, which until then had remained good, began to give way.

In the middle of the month of August last she went to England, to try the effects of a short sea-voyage and of change of air, but having been told by a medical gentleman there that she was threatened with consumption, she at once returned home in very low spirits, anxiously watching for every symptom she thought might be indicative of decline.

At this period the erysipelatous blush of redness on the side ceased to appear, although the catamenia were still absent, and after a fit of retching she, for the first time, perceived some blood in her expectoration. At the regular period for the

monthly return in September the symptoms returned more violently than hitherto, and she then threw up about half a pint of a reddish-brown matter; the same quantity of a similar matter was vomited every morning for four or five days, when it ceased to appear in what was rejected from the stomach. In the month of October, at the regular period, this black vomiting again returned, and now, for the first time, the dark bluish-black stain was manifested at the inner canthus of the left eye.

"When I first saw it," writes Dr. Quinan in his notes, "I conceived that it was caused by the excessive straining, but on the following morning a large black patch was present under each eye, and the conjunctivæ remaining unaltered in appearance, not being congested or swollen, it became evident the stain had not arisen from the giving way of any of the capillary vessels. Since that period the dark patches remain under both eyes, extending somewhat, and becoming of a deeper black colour at each monthly period. The skin is excessively tender to the touch, so much so that she will not allow a local application of any sort to it; much of this soreness, however, I consider, has been produced by our endeavours to remove the stain with soap and water, but which has not succeeded in doing so. The vomiting continues every morning; her cough is exceedingly troublesome; and her appetite and spirits are failing."

The treatment employed by Dr. Quinan consisted in supporting her strength throughout the whole of her illness with nourishing diet, the administration of tonics, emmenagogues and stimulants, and recommending the free use of open air exercise.

At this time, December, 1854, I first saw the case with Dr. Quinan; the girl was much emaciated, except in the face, highly hysterical, nervous, and excitable. The dark stains were extending, covering now nearly the entire of the upper eyelid of the right eye, and partly that of the left; the under eyelids of both eyes were completely stained, and on the right side the dark patch reached the skin of the cheek. The colour was precisely that which would be produced by Indian ink, and gave an unearthly brilliancy to her fine eyes, rather setting off, nay, even giving additional beauty to, a rather pleasing face. On examining the dark patches with a powerful lens, it was at once evident that the stain was not of equally deep colour throughout, but was dotted over the surface of the skin, the dark dots corresponding to the orifices of the sebaceous glands, which are on this part of the face so extremely numerous and closely set; no attempt was made by me to remove the stains by washing; indeed, when proposed she stated decidedly that nothing



STEARRHEA NIGRICANS.

would compel her to submit to the trial, she suffered so much pain from attempting to do so herself; and the surface of the skin was so exquisitely tender, that she could not bear the most gentle pressure with the finger on the part.

The accompanying lithograph, after a portrait from the talented pencil of Mr. W. C. Forster, admirably depicts the appearance of this young girl when I first saw her with Dr. Quinan.

Before proceeding to give my views as to the nature and pathology of this rare and interesting affection, I think it will be better to insert here the following most graphic description of a case which fell under the observation of Professor Law, with which he has most kindly favoured me for publication.

“ I listened with great interest to your communication made at the last meeting of the Association of the College of Physicians upon the subject of the dark circle round the eyes in the female, whom I had also an opportunity of seeing, through the kindness of Dr. Quinan. Your observations and the case had a peculiar interest for me, as I had a case, exactly similar in all its circumstances, under my care about twelve years since, and which, although not immediately under my observation lately, I had still an opportunity of hearing about, as the lady, the subject of it, was obliged to appeal to me to vindicate her from the imputation of having produced this dark areola round the eyes by some artificial means. She was, at the time of her making application to me to repel this cruel charge of imposture, living as governess in the family of an English physician who practised homœopathy. She had a severe illness, in which the physician in whose service she was attended her. He considered her ailment to be inflammation of the womb, and even suspected abscess of the organ. This was the opinion also of another homœopathic physician who was called in consultation. They both regarded the case as one of extreme danger. The very urgent symptoms, however, passed over, and now the dark circle appeared around the eyes. The poor lady making very slow progress towards recovery under homœopathy, thought she would venture to try the effects of medicines from which she had formerly derived benefit, and employed the servant to fetch her some Epsom salts and senna. This reached the ears of the doctor, whose anger for the affront put upon homœopathy acknowledged the restraints neither of decency nor good feeling. He did not hesitate to charge with imposture and deceit a lady both by birth and education, and whose circumstances were once such as rendered it very unlikely that she should ever be called upon to fill a situation which

would expose her to such cruel treatment. The offended homœopath had the good taste to impute to this young lady, to whom he had confided the education and moral training of his children, collusion with the servant to deceive him, and to charge her with painting her eyes (*cui bono?*), and, worse still, to throw out dark insinuations respecting the nature of the original affection of the uterus,—insinuations so cautiously put forward as not to expose their author to legal consequences, while they were mischievous enough to damage the lady's character if they had had a scintilla of truth in them. Under these distressing circumstances, she wrote to me from England (for she was an Irish lady in an English family), and detailed to me all the particulars of the painful history as far as delicacy would allow. She begged of me to write to the doctor, and to state to him how I had attended her in a former illness in which this remarkable appearance of the eyes was present. Of course, I at once complied with her request; but it was to no purpose; the implacable homœopath persisted in charging the lady with employing some pigment to cause the dark circle round her eyes, for that he had challenged her to submit the permanency of the stain to the test of soap and water, which she had refused, which he concluded she would not have done unless she feared the result. He could not see in the refusal the indignant expression of wounded feeling that could not stoop to vindicate itself against crude and cruel suspicion. The unhappy dose of salts and senna was an outrage on homœopathy that nothing could atone for. The lady capable of it must be capable of a degrading collusion with a servant, and of painting her eyes to deceive; her virtue, too, must now be called in question. The salts and senna threw a dark shade over the original illness of the unhappy lady that never was thought of before. Through their reflected light the uterine affection wore a suspicious aspect that never till now suggested itself. I was again called upon to try to persuade this gentleman that the lady was no impostor, and that she had black eyes in her former illness. As Sir Henry Marsh had also seen her in that illness, and was aware of the remarkable appearance of the eyes, I asked him to allow me to add his testimony to my own as to the great improbability of this appearance being anything but the effect of disease in the present instance, as it unquestionably was in the former. Sir Henry, of course, not only permitted me to use his testimony in favour of the genuineness of the phenomenon, but considered the regarding it in any other light as a medical fiction. My second attempt to convince this impracticable gentleman had as little success as the former.

The weight of Sir Henry Marsh's name gained nothing. In vain I asked what substance this lady could employ that would produce this stain, or what motive she could have for the deception? Reason and feeling were appealed to in vain. Salts and senna were too strong a dose, too allopathic, not to blind the one and stifle the other. The lady must be an accomplished impostor, and must suffer at the shrine of outraged homœopathy.

"I had heard of Dr. Quinan's case before I saw it, and from the description of it was sure that I should find in it some features of resemblance to the case in which I had felt so painful an interest. The resemblance was more complete than I could have anticipated. I could have almost believed that my patient presented herself before me; the shading of the eyes was identically the same as if it had been effected by Indian ink, and the pallid anemic complexion, as well in Dr. Quinan's case as in mine, threw the dark circle around the eye into more striking relief. I questioned Dr. Quinan's patient through the history of my own, and found there existed between the two a most perfect agreement, even in their minutest details. The same irritability of stomach and perverted appetite existed in both. The same derangement of the uterine function was present in both. There was one point in which they seemed to differ: viz., in the extreme sensibility in the seat of the discolouration in Dr. Quinan's case. As three years had elapsed since the painful circumstances to which I have alluded occurred, and as I did not remember if there existed in the first attack in which I had seen the lady the same unusual sensibility in the discoloured parts as in Dr. Quinan's case, I wrote to her to inquire if such was the case, and received the following reply:—

" " Birmingham, Dec. 26, 1854.

" " I only received your note this morning, and in compliance with your wish endeavour to answer it as well as I can. As to the dark circle round my eyes, I never felt any pain there, although I remember my eyes were always very irritable and tender, so that I could not keep from rubbing them, and averse to light. This appearance was invariably accompanied by nausea of the stomach and frequent sickness. At first the discharge from it was of quite a dark colour; afterwards I used to think it was merely water or something I had taken. But what I suffered most from at these times was the greatest pain and weight in the lower part of my back and stomach. At Rysh I had this to such an extent as to be almost unable

to stand; the pain extended down my left leg to the foot, and was tender on pressure. I am very thankful you have met with this case [I mentioned in my letter, that I had met with a case like hers], although, as to this part of their accusation, it seemed to me too absurd; for I have not an idea how or what I could be thought to use to produce this.'

"She concludes by saying: 'I cannot express how grateful I have always felt for the very kind way you took up this painful matter for me, when I had no one else to whom I could appeal,' &c.

"I consider my case will be a useful addition to yours; the remarkable appearance of the eyes is a sufficiently rare phenomenon to entitle it to notice. The cases were so exactly alike, that whatever explanation of the phenomenon applies to one, may be safely extended to the other. The subjects of both were very hysterical; the catamenia were irregular in both. I had little doubt that in my case the areola round the eyes was the colouring matter of the blood extravasated into the loose areolar tissue which exists in that position, and was an instance of those strange *errores loci* of the blood that occur in females in whom the menstrual discharge is defective or irregular. The dark discharges from the stomach in my case were, no doubt, of the same nature. The *moral* features of my case have obliged me to be more prolix than I could have wished, but I know that the vindication of injured innocence will be received as an excuse with you.

"P.S. I submit to you the following designation for this novel disease, viz., *Blepharo-melena*: in the formation of it I have attended to the poet's direction when he says:—

" 'Si forte necesse est
Indiciis monstrare recentibus abdita rerum,
Et nova fictaque nuper habebunt verba fidem, si
Græco fonte cadant, parce detorta.' "

If we analyze the foregoing cases, we see at once that they present common symptoms as regards the constitutional derangement with which the black discoloration of the face is manifestly connected. They all occurred in young females affected with derangement, partial or total suppression, of the catamenia; in three of them, those most accurately reported and we may presume most carefully observed, there was black vomiting, most probably dependent in all, in Dr. Quinan's case evidently so, on the stoppage of the menstrual flow; and in one at least, Dr. Read's case, the black discoloration disappeared, not to return, on the restoration of the healthy uterine function:

the disease must, therefore, be regarded as one of the results of this deranged state of health in the female sex. As to the exact seat of the discolouration, it is shown by the two first cases recorded to be on the surface of the skin—for it was removable in both by washing, and not, as conjectured by Professor Law, an extravasation into the loose areolar tissue; and repeated careful examinations, which I have made with a powerful lens in the patient who was under Dr. Quinan's care, convinced me that such is the case; moreover, in appearance it altogether differs from those blood stains beneath the dermoid structure, which are by no means uncommon in the so-called vicarious menstruation. The designation for the disease, suggested by Professor Law, is, I think, scarcely needed; for it may very well take its place among the affections of the sebaceous glands, and under that form described by dermatologists as *staeorrhœa*, the specific name *nigricans* being applied to it; it is thus described by Mr. Erasmus Wilson, and also by myself in my *Treatise on Diseases of the Skin*^a; and now that I have had an opportunity of witnessing a case of the disease, I see no reason for altering its nosological disposition there. I consider that, as not uncommonly occurs in females in whom the menstrual function is deranged, the secretion of the sebaceous glands becomes augmented in quantity, and that in these special cases it is furthermore altered by being stained with the colouring matter of the blood; just as in the same cases, and as occurred in those above narrated, matters rejected from the stomach are often of the colour of grumous blood; while in other examples we have dark grumous sputa, dark bloody urine, or hemorrhagic extravasation into the areolar tissue beneath the true skin. As regards the treatment of these cases, if this view as to their nature be correct, it is evident that our therapeutic measures must be altogether directed to restore a healthy state to the uterine function, and that local remedies can be of little or no avail.

While the foregoing observations were passing through the press (April, 1855), I had an opportunity of again carefully examining Dr. Quinan's patient. Her general health is much more broken down, although the vomiting of dark matter has, to a great degree, ceased, and the cough is better. The black discolouration has, however, extended very much over the face, now engaging both cheeks to below the malar bones, and also the alæ of the nostrils; the shade of colour, too, is deeper. On the forehead and around the black stain on the cheeks an exudation of the yellow matter of the sebaceous glands has taken

place, presenting precisely the same appearance as is witnessed in *Stearrhœa flavescentis*; and wherever this sebaceous flux has been rubbed off, or the parts beneath irritated, the portion of the integuments on which the diseased secretion had existed is seen to be in an inflamed state, the sebaceous follicles hypertrophied, and their orifices enlarged; in short, in precisely an analogous condition to what occurs in that disease, except that many of the enlarged orifices are filled with the black matter which on other portions of the face produces the dark stain. If any confirmation were required that the view I have taken above of the nature of this affection is a correct one, the present condition of this patient is surely sufficient to show that it is but a form of the disease now pretty generally termed by dermatologists, *Stearrhœa*.

ART. XIII.—*Cases of Traumatic Tetanus, treated by different Methods.* By RICHARD G. H. BUTCHER, Esq., M.R.I.A., Surgeon to Mercer's Hospital; Member of Council and Fellow of the Royal College of Surgeons in Ireland; Examiner on Anatomy, Physiology, and Pathology thereto for five years; Member of the Royal College of Surgeons of England, &c.

CASE I.—*Extensive Gun-shot wound of the Hand and Wrist-joint successfully treated, and Tetanus averted by the frequent application of chloroform vapour to the part. The stimulant effect of it, and the reaction consequent upon the use of intense cold during operation, proved to be productive of rapid cicatrization and healing.*

AT a meeting of the Surgical Society, held on Jan. 27, 1855, an interesting paper was read by Dr. Hardy on the application of the vapour of chloroform in producing local anæsthesia. A patented instrument was exhibited by this gentleman, most perfect for the prescribed purpose, and its efficiency practically illustrated by numerous cases derived from various sources. Since the period referred to, a striking example occurred to me, in which I most beneficially used it, and with such results as, I am sure, will be considered valuable by all.

A little boy, P. M'G., aged ten years, was admitted into Mercer's Hospital, the 29th January, 1855. On the previous day he was struggling with his brother to get possession of a gun, which, a short time before, their father had laid upon a table, after returning from shooting. The children were un-

aware that it was loaded; the little patient had a hold of the end of the barrel, while his brother caught the stock. In the effort which was made to possess the gun, it went off, and the right hand of the former was greatly shattered; the thumb was entirely blown off; the palm of the hand opened; and the anterior wall of the wrist-joint shot away, with the carpal bones displaced and irregularly presenting in the wound. Shortly after the accident the hemorrhage was severe, and two large arteries were ligatured by my friend Dr. M'Evoy of Balbriggan, who forwarded the case to Dublin to be placed under my care in hospital. The collapse consequent upon the shock after the injury was more prolonged than that usually met with when accidents occur at this period of life; however, by the administration of stimulants, warmth, &c., it gradually passed away. The child was not suffering from pain in the part, and permitted examination without wincing. The explanation of all this was readily revealed: the entire lacerated surface, including three-fourths of the breadth of the hand, the deeper chasm from which the thumb was rent at its articulation with the carpus, together with the tearing up of the second row of the carpal bones, were one and all mashed up and disorganized; the powder being absolutely incorporated with the pulpy tissues for at least from an eighth to a quarter of an inch in depth. Poultices of linseed-meal, wet with a chloride of soda solution, were used as local applications to afford heat and moisture, and correct fetor. Hydrargyrum cum cretâ and Dover's powder were given in small and repeated doses to favour gastric secretions and allay irritation. This treatment, with little alteration, was continued up to the 10th of February, when the sloughs were being cast off from the deep part of the wound, and exposing the granulating surface. On several occasions troublesome arterial bleedings occurred, but were suppressed by the application of turpentine, small shreds of lint being torn up, steeped in the fluid, and passed into every recess from which the blood flowed. On one occasion the hemorrhage threatened more severely, and evidently came from the injured ulnar artery in the palm; it was only restrained by compresses over the trunks of the radial and ulnar vessels above the wrist, and gentle yet steady pressure by compresses in the wound, equally maintained by a bandage round the hand and rolled upwards. These repeated bleedings were the only complications which presented up to the 11th, and they were stayed by the means reported. On the 10th, nearly all the deadened and sloughy parts were cast off, and the exposed surface was of a brilliant red colour, stamped with vitality; so sensitive was it, that the most careful dressing induced severe

agony ; on the lightest touch the sufferings of the patient were augmented in the extreme. The entire countenance was convulsed, and absolutely assumed the tetanic expression, while the limbs after a few struggles became rigid ; on perpetuating the irritation these results were repeated. I applied the nitrate of silver freely over the surface, only to be disappointed as to beneficial effects—deadening of the sensibility, which I had frequently obtained in almost parallel cases ; but in this instance the caustic only aggravated the mischief, as a burning pain fixed in the part and remained for many hours after. Considering that this case would be a good one to test the efficacy of Dr. Hardy's chloroform douche, I procured it, and on the morning of the 12th used it with the following happy effects.

At first I confined the hand and wrist in a bladder, and into this introduced the chloroform vapour, but after doing so for some time, bleeding was produced from many points in the wound, and to so great an extent that I was compelled to desist, and substitute the simple application of the vapour by the bellows unattached. After blowing on the part for fifteen minutes, its sensibility in a very marked manner diminished, and by continuing it for five and twenty, all sensation was annihilated. I could place my finger upon the surface, and apply caustic with impunity. The child was looking on, and had no apprehension about being hurt. While the part was rendered thus insensible, I was enabled to adjust the required dressings, to sustain the part and fix it upon a splint, without the least evidence of pain. From this time, too, I administered small quantities of laudanum in repeated doses. On the following morning, the 14th, the child looked forward to having his limb dressed without fear or apprehension ; while, previous to this time, he lay restless, vigilant, and watchful, awaiting my visit. Up to the present time (the 23rd), day after day, the chloroform vapour has been used, and attended with the same issue—complete immunity from pain. This, though being the most marked characteristic, there is yet another beneficial result, very valuable, and not to be lost sight of, namely, *the healthy action aroused in the part by the stimulant nature of the vapour*, for this is its effect when first applied, though insensibility rapidly supervenes upon its continued influence. The *double benefits* accruing from this therapeutic agent, then, are powerfully enunciated by the foregoing case. At this moment the boy lies free from all pain, rescued from the threatening dangers consequent upon so severe an accident ; the wound has healthily granulated ; on a level with the surrounding surface new skin has formed round its margin, and cicatrization is most rapidly progressing towards the repair

and cure of the part. To establish beyond doubt the salutary *local effects* of the chloroform, it may be necessary to mention, the strictest precautions were adopted that the patient should not inhale any of the fumes emanating from it; the child was covered up beneath the bedclothes, and the limb, placed at nearly a right angle with the body, was then acted upon, the current of air being directed away from him^a.

The effect, which I have noticed as the result of the chloroform vapour, namely, "*the healthy action aroused in the part after its use*," I have also observed as a sequence to the adoption of *cold*, when employed to freeze the part after Arnott's method. The following case, occurring likewise in hospital practice, will substantiate in a very remarkable manner the fact.

J. K., aged eleven years, admitted into Mercer's Hospital on the 27th of last December. He was suffering from onychia of the middle finger of his left hand; the disease had existed since May last, a period of six months; various applications were resorted to, but with no beneficial result. When I saw him, the unguinal phalanx of the finger presented a large bulbous mass, three to four times its natural size, and of a purple red colour, its intensity greatest around and a little beyond the ulcerated line corresponding to the matrix. The nail was discoloured, of a brownish tawny hue, and standing upwards nearly at a right angle with the finger; from the deep ulcerated sulcus around its attachment a fetid, ichorous pus oozed constantly out. The part was extremely tender to the touch, indeed the lightest movement of the nail produced great agony; so sensitive was the part, that the hand was rendered useless for the previous two months. On the 28th I froze the part with a mixture consisting of two parts of pounded ice and one of salt, placed in a muslin cloth, and so applied as to envelop the unguinal phalanx, and partly that next it; it was applied for ten minutes before sensibility was even nearly destroyed; but after five more the effect was almost perfect. Coexistent with this state the part became almost pale, the deep purplish red colour having forsook it, it was likewise diminished in bulk. Having obtained this condition, I forcibly evulsed the nail "*en masse*" with a pair of strong pliers; it came away unbroken. The child at this moment felt a little pain, but it passed away in a few seconds; about half a drachm of blood flowed after. On passing round the wards, in half an hour after, I came to the child; he was laughing, and perfectly free from any annoyance.

^a April 6th. The wound is now healed, and the remaining part of the hand will be useful.

I dressed the finger with a long band of lint wet in cold water, and rolled rather tightly around the bulbous finger; even this pressure induced no pain. On the day following the finger was considerably reduced in bulk; a few drops of healthy pus from the vicinity of the matrix replaced the sanguous discharge, and the new skin was being formed on the extreme end of the dorsum of the unguinal phalanx; a few grains of red precipitate finely levigated were scattered over the surface, and the finger strapped with soap-plaster, so as to press it into form. A similar mode of treatment was pursued up to the 2nd of January, when the finger was entirely healed, with its bulbous extremity reduced and moulded to its natural shape and size. The boy likewise possessed full power over it, and permitted it to be handled and pressed without inconvenience. Thus, then, in five days, the part was healed, and this intractable affection cured. The child absolutely screamed with pain when first the ice was applied, but after three minutes it passed away, and never returned.

The morbid sensibility was entirely destroyed, and though great change was produced in the action of the capillaries of the part, yet it only tended to the rapid restoration and healing of the injured member.

CASE II.—*Tetanus occurring on the fifteenth day after Severe Burn, treated with the Cannabis indica.*

Kate Shaw, aged eight years, admitted into Mercer's Hospital, under my care, January 25, 1852. She had been severely burned over the chest and arms, her clothes having caught fire. All the early urgent symptoms, both local and constitutional, were alleviated and removed by appropriate dressings and medicines. On two occasions she was threatened with effusion in the head, and each time rescued by relays of leeches, and the free administration of mercury. After passing through these dangers, on the 9th of February, early in the morning, the child was seized with symptoms ushering in tetanus, and at 8 A. M., so rapidly had it advanced, that she could scarcely swallow. The countenance wore its well-known characters, so similar to that recorded in the previous case, that I shall forbear recapitulating. There were, however, in addition, gentle spasms through the entire body, short, decided, and characteristic. The tincture of cannabis indica was administered in five-drop doses every hour, and chloroform employed by inhalation. Stimulants were also poured down the throat on the morning of the 10th; twenty-five hours after the first invasion of the disease, opisthotonus was established in a very marked manner; and

slight spasms convulsed the features every quarter of an hour; it was remarkable the regularity of these accessions. The cannabis indica was perseveringly pressed in six-drop doses every hour, and enemata of turpentine and assafœtida frequently administered. The power of swallowing was yet preserved; stimulants and rich broths were freely given. On the 11th the effort to swallow instantly brought on violent paroxysms, pain being very acutely felt at the moment of seizure, and expressed by loud, prolonged, sudden screams; and now, the spasms at their height, the body was absolutely jerked forward. Though the jaws were nearly locked, small quantities of fluid could be got down between the teeth, while repeated efforts of deglutition were requisite for its being swallowed. The respiration was so rapid that it approximated a perfect pant. Pulse small, rapid, and hard. Now, all this time the cannabis indica was freely pressed every hour. At 2 P. M. the spasms abated; the body lay straight, yet rigid, and the convulsive distortions of the face were neither so frequent, marked, nor prolonged. Shortly after 4 P. M., the mouth was firmly closed, yet the rigidity of the body and limbs passed away; the mental faculties were unclouded, and the patient died without a struggle, exhausted, at 10 P. M.

CASE III.—*Tetanus arising on the tenth day after extensive Burn over the Chest and Abdomen, treated by Chloroform and Opium internally.*

Ellen Cooney, aged ten years, admitted, under my care, into Mercer's Hospital, February 15, 1853. The child's clothes took fire, and she was burned extensively over the right arm and upon the anterior surface and right side of the chest; the abdomen was also implicated as low as the umbilicus. The destruction of the parts was not only extensive but deep, in many parts involving the tissues to the third and fourth degree of Dupuytren's classification. The patient was nearly insensible, and collapsed to almost the lowest degree when brought to hospital; yet by the exhibition of warm wine and water, heat to the feet, and wrapping the injured parts in cotton wadding, a simple unguent spread upon linen being interposed, this, the first danger, was averted, and after some time the heart was active in propelling its life blood to every part. Ordered at 10 P. M. eight drops of tincture of opium to procure sleep. On the following day, the 16th, consciousness was entirely restored, and the circulation re-established fully to that extent desirable. Thus the case progressed favourably up to the 23rd, when on the separation and detachment of the sloughs her sufferings

were greatly augmented ; indeed, up to this period she experienced little or no pain ; now, however, on the exposure of the living parts, her screams on being dressed were continued and heart-rending. The most suitable applications were employed, and ten-drop doses of laudanum occasionally given ; the bowels were carefully attended to, and the hydrargyrum cum cretâ given. The same sufferings were endured at each dressing ; no applications, neither strong sedative lotions, nor the nitrate of silver, could allay the morbid sensibility of the parts ; and later, a free exhibition of opium, even at this tender age, could not procure rest.

On the morning of the 26th, at 6 A. M., the patient tried to drink and could not ; at the same time she screamed out to the nurse that she was choking ; her mouth was partly closed.

9 A. M. At this hour there was no doubt as to the nature of the complication which had arisen : tetanus was well developed, and the head rigidly drawn back. A piece of stick was placed between the teeth, keeping them asunder to the extent of a quarter of an inch ; at intervals slight paroxysms would ensue, and the peculiar tetanic expression would be most strikingly manifested in the face : the brows corrugated, the nose dilated, and the mouth pressed, its angles being drawn backwards and upwards ; eyelids half closed, and in a wrinkled, tremulous state. Opium was repeatedly given, in very large doses, and pressed to the full extent ; strong liniments, with belladonna, were freely rubbed round the stiffened neck and locked jaws ; chloroform was freely administered in five-drop doses ; but all treatment was ineffectual towards checking the steady onward course of the disease. The paroxysms were not severe, but they were rapid in succession, and at half-past 5 P. M. the child died, exhausted in one of them, it, however, not being more violent than the preceding ones.

CASE IV.—*Tetanus occurring on the eighth day after a Punctured Wound in the Heel, treated by the Inhalation of Chloroform.*

James Kelly, aged eight years, admitted into Mercer's Hospital, under my care, June 29, 1851. The patient not being able to speak, his mother gave the following history of the case : —On her return home at 10 o'clock the previous night, she found the child sitting on the steps of the hall-door waiting for her. He instantly complained of having been beaten and ill-treated by some playfellows, one of whom gave him a severe blow on the throat with a stone three hours before. She also remembered that eight days before, a large needle ran into his left heel,

and it was instantly drawn out without being broken; but the part continued slightly tender ever after. When she brought him into the house at 10 o'clock, she made tea for him, but he refused to drink it, assigning as a reason that "his throat was too sore." Afterwards he was placed in bed, and obtained sleep for nearly three hours, when he awoke and "got a kind of fit; his head was drawn back, and he could not straighten it." At this time the child complained of great pain in the throat, which the mother attributed to his having got cold from his being exposed to the night air. He fell asleep soon again, and remained so for an hour, when he awoke in violent spasms, so violent that "he fell out of the bed quite stiff." He had "five returns of the fits" before he was brought into hospital the following morning at 9 A.M. I saw him immediately on admission. His condition was then as follows:—The jaws were nearly closed, and he could scarcely swallow, owing to the spasm which quickly beset the muscles of the pharynx; yet, after much agony and convulsive efforts, the act, however imperfectly, was performed, and fluids in small quantity were got down. The head was forcibly bent backwards, and this condition never entirely relaxed; while superadded, at intervals of a few minutes, were paroxysms, during which there were violent extension and rigidity of the limbs, and horrible distortion of the countenance, from perverted action of the muscles; the nose being drawn up and dilated, the forehead wrinkled both vertically and across; the mouth pursed up, at the same time its angles drawn towards the cheek bones, forming the most frightful exhibition of the *risus sardonicus*; the pulse was very rapid, 135 in the minute, and hard and full; the respiration, from the very first, was performed with the greatest difficulty, and accompanied by a sense of agony in the throat, while each effort was attended with a croupy noise; there was profuse perspiration over the entire body, and characterized by its peculiar pungent odour; darting pain shot back from the sternum to the spine, and during the paroxysm the bone was considerably depressed. As the disease advanced, the posterior muscles of the neck were so violently contracted, the head was absolutely drawn down upon the neck, so as to make the larynx and trachea project and stand out very prominently on the anterior aspect of the neck, and here the spastic action of the muscles almost ceased, for the muscles of the spine were not affected beyond the cervical region, but the muscles of the extremities seriously participated in the morbid action, both the upper and lower being thrown into a rigid state of extension during each

paroxysm. The mind, in the midst of all this anguish, remained perfectly clear.

From the history of this case there is evidence of the child having sustained injury, in two ways, from a severe blow of a stone on the throat, and from a punctured wound of the heel. Of the latter being the cause of the alarming and fatal train of symptoms there was evidence from the following fact. On pressure being made over the heel, where only a little black speck marked the point of entrance of the needle, the situation of the wound, the patient was instantly thrown into a paroxysm. An equal amount of pressure applied to the opposite limb produced no sensible effect whatever: this result could be obtained over and over again, rendering the experiment conclusive. The occurrence of the boy having received an injury of the throat brings forcibly to my recollection a case which I saw a few years since. Two young men were boxing, and one received a heavy blow upon the larynx, which broke the left ala of the thyroid cartilage: the day after but one he was seized with symptoms of trismus, followed rapidly by opisthotonus, and he died in sixteen hours, dating from the first stiffness of the neck and difficulty of swallowing, to the last expiration.

From the very first the treatment of this boy (Kelly) was energetic: a large quantity of calomel was got down by the mouth, mixed with a little mucilage and water and conducted on a spatula to the back of the tongue; the entire abdomen was rubbed over with mercurial ointment, and swathed with a flannel roller besmeared with unguent; a quantity was also placed in each groin and axilla. Thus I endeavoured to bring the system under the influence of mercury by internal administration, and rapid inunction; purgative enemata, largely charged with oil of turpentine and assafoetida, were repeatedly given, from the known fact of the obstinate costiveness which attends the disease, and because we have convincing evidence of their strong revulsive influence on diseases of the cerebro-spinal centre; the occiput and upper part of the spine were freely blistered; and the seat of injury in the heel was incised and morphia placed in the wound. Almost from the very first the power of swallowing was gone, but every effort was made to get down stimulants, whisky and water, &c. At first the paroxysms were produced every eight minutes, and of the most violent character; the inhalation of chloroform was freely given on the accession of each seizure, and during the intervals nearly as liberally supplied: with this intention about a drachm and a half was poured on a warm towel, and applied over the

nose and mouth. The patient never objected to it after the first trial, but anxiously seized and pressed the towel to the face when he felt the fit coming on; the constant atmosphere of chloroform which he breathed certainly rendered the paroxysms shorter and more mitigated in their violence; it tended also to the lowering of the pulse in a very remarkable manner. This treatment was continued uninterrupted to the end. In order to guard against congestion of the brain from the repeated exhibition of the chloroform, I applied eight leeches to the temples, and an ice cap to the head. The creature was perfectly conscious all through, and though he could not be cured, his sufferings were greatly lessened by the anaesthetic. For several hours (nine) before death, the darting pain backwards from the sternum was removed, and the intensity and duration of the spasms of the limbs diminished, while the tension of the jaws never relaxed, and the head remained rigidly drawn back. In this state he died, twenty-four hours after first complaining of stiffness of the neck and difficulty of swallowing, and twenty hours after the accession of the first paroxysm. The patient died calmly.

The body was removed immediately after death, and I regret to state I could not obtain an examination of it.

CASE V.—*Tetanus occurring on the twelfth day after extensive Burn of the Thigh and Leg, treated with large doses of Opium, and by the Chloroform Douche locally, with the administration of the drug both internally and by inhalation.*

Jane Kelly, aged thirty-eight years, admitted into Mercer's Hospital under my care, February 19, 1855. In standing before the fire her clothes caught the flame; it was quickly extinguished; nevertheless her right thigh was severely burned on the inner side nearly as high as the pubis, and extending downwards as low as the middle of the leg; two-thirds of the internal circumference of the limb were injured, an extensive portion of the middle of the thigh being actually killed, while the surfaces above and below were injured to the second and third degree. She was received into the house cold and collapsed; warm drinks were instantly given; a full opiate administered, and the limb rolled in cotton wadding.

March 3rd. Up to this date the case progressed favourably: simple unguent spread upon lint was applied over the tender surface, and a thin layer of wadding over all. Opiates were constantly given, so that pain was by no means a prominent symptom.

4th. My alarm was great when on reaching the hospital at 9 A. M., I was informed the patient complained of stiffness of the masseter muscles, difficulty in opening the mouth, and pain in the back of the neck, on the previous evening, and now, the symptoms of tetanus were fully developed, and the countenance characteristic of the malady forcibly expressed. She referred a "burning, pricking kind of pain to the injured surface, as if a number of pins and needles were continually darting through it." This sensation was particularly felt over the knee where the raw surface was fully exposed, the deadened parts being cast off, and so morbidly sensitive was this part that the lightest touch induced spasms of the muscles of the thigh, throwing the entire extensors into a convulsive state. I applied Hardy's chloroform douche unremittingly over the part for half an hour, and it acted most favourably in checking the spasms and destroying the sensibility, for after its application I could touch the part with my finger, the patient not being conscious of it, and re-adjust the dressings with simple unguent without annoyance. She was ordered one grain of powdered opium every third hour, and four ounces of spirits; eggs; beef tea; and a piece of stick, in the form of a wedge, to be placed between the teeth and retained there by strings.

5th. Had sleep; no return of the "pricking, burning pain" in the limb; spasms not so frequent; countenance as on yesterday, perhaps a shade less distorted; the chloroform douche was repeated with the same result as before; insensibility of the surface "leaving a delightful cool sensation in the part." She was ordered a full turpentine and assafœtida enema; to continue opium; the parts over and around the jaws to be stupefied with flannels wrung out of boiling water, and afterwards freely rubbed with a strong liniment holding a large proportion of belladonna; spirits and nourishment as before. 3 P. M. Can swallow with somewhat less difficulty; no relaxation of masseters; no pain in burned surface; the douche was repeated every fourth hour for thirty minutes at a time; the opium stimulants were continued.

6th. Patient had some quiet sleep, lasting for periods of an hour to an hour and a half; pulse stronger, and expression of face improved; the muscles of the jaws slightly relaxed, and I was enabled to place a thicker piece of wood between the teeth; chloroform douche to be repeated every third hour; to continue the opium; spirits, six ounces; beef tea, eggs, &c. 4 P. M. A large assafœtida and turpentine enema. 9 P. M. Feels better; mouth not so rigidly set. To continue everything.

7th. Pain in the burned surface gone; has some spasmodic

twitchings; enveloped loosely the entire injured limb in oiled silk, and inflated it with chloroform vapour for three quarters of an hour, only with some relief. To continue opium, spirits, beef tea, and to have the enema repeated. 4 P. M. Chloroform douche applied as in the morning, confining the vapour. 9 P. M. Chloroform douche as at 4 o'clock; to continue everything.

8th. Had some disturbed sleep through the night; but this morning spasms in the limb increased in frequency and violence; still able to swallow; to continue the opium, and also to have twenty minims of chloroform every hour, and to inhale chloroform occasionally during the day, yet not to produce insensibility; spirits, six ounces; nourishment, as much as can be taken. 9 P. M. No amendment; to continue the opium and chloroform draughts through the night.

9th. Much worse, spasms very severe, not only in the affected limb, but likewise in the sound leg and thigh; the abdomen not rigid, yet the darting pain from the ensiform cartilage back to the spine is very severe; the face is now constantly convulsed, and also the muscles of the upper extremities are similarly affected; the muscles of the back of the neck are now prominent in spastic contraction, and opisthotonus nearly complete. The power of swallowing is gone, and at any attempt to do so she refers great agony to the root of the neck. Chloroform inhalation to be repeatedly afforded; she is conscious of the relief which it yields, and makes signs to have it, as mitigating the severity and shortening the duration of the exacerbations. At 2 P. M. she died in a violent and prolonged spasm, apparently implicating the entire muscular system, the whole trunk being jerked forcibly forwards in the final death-struggle.

Permission to examine the body could not be obtained.

In the foregoing cases of tetanus I have given a trial to those medicines in which, from their recognised powerful anti-spasmodic properties, the highest expectations have centered: I allude to the resinous tincture of Indian hemp, and to chloroform. The former medicine I have seen work most beneficially in some neuralgic affections, and its sedative influence I have witnessed strikingly predominant after a few doses, prostrating the powers of life, and reducing the patient to a perfectly cataleptic state, even for some time after the suspension of its use. In Case II. I used it very freely, when the age of the patient is considered, yet I obtained no marked beneficial result: the case ran its course steadily onwards unmitigated, and terminated fatally sixty hours after its first invasion. Chloroform,

too, I have given a fair trial to : the value of Dr. Hardy's douche in allaying local pain is exemplified in Cases 1. and v., while in the former, by the steady use of it when symptoms of tetanus threatened, their development was arrested and life saved; whereas, in the latter, *when established*, the disease seemed to continue independently of its local origin, and not to be influenced by local means. The internal administration of chloroform, though in conjunction with large doses of opium, did not cure the disease, but only retarded its baneful influence, just as the inhalation of the anæsthetic only checked the agony of the convulsive paroxysm, mitigating the torture and rendering less frequent the spasms of the diaphragm.

ART. XIV.—*On the Presence of Foreign Bodies in the Air-tubes. Illustrated by a Case in which a Fish-bone passed into the Left Bronchus.* By JOHN HUGHES, M. D., Licentiate of the Royal Colleges of Physicians and Surgeons of Ireland; Physician to Jervis-street Hospital, one of the Medical Officers of the Richmond Lunatic Asylum, &c.

ALTHOUGH the records of medicine furnish numerous examples of the introduction of foreign bodies into the air-passages, which present the greatest variety and diversity of character, both as regards the foreign bodies themselves and the symptoms they give rise to, yet the subject is far from being exhausted; indeed, I might say its extreme interest is scarcely diminished. And this is not surprising; for we cannot well imagine anything more frightfully distressing or dangerous to a patient than the presence of a foreign body in the air-passages, nor one the management of which more completely taxes the skill and judgment of the medical attendant.

These considerations will, I trust, excuse me in bringing forward the details of a case which has been lately under my care in hospital, and the interesting pathological appearances in which have been carefully noted. To an account of it I will append some general remarks illustrative of the accident and its treatment.

James Brady, aged 38, married, a house-carpenter by trade, applied at the dispensary attached to Jervis-street Hospital, about the middle of last December, for relief from a cough, which was accompanied by purulent expectoration and general symptoms of hectic fever, and which was, as he stated, preceded by hemoptysis. He appeared at the time to be in an advanced stage of tuberculous disease of the lungs, but no

physical examination was made: some cod-liver oil was prescribed. In a few days he presented himself again, nothing relieved as to his symptoms; but while answering some questions a very strong fetor from his breath was perceived, and in order to make a full examination he was taken into hospital.

After his admission he stated, that up to ten weeks back he was as healthy a man as any in Dublin; that one day, about that time, he came home to his dinner in usual good health, and in the evening was seized with cough and vomiting; that the cough increased rapidly, and at the end of two weeks was attended with expectoration of a rusty-brown colour, and sometimes with a bad smell; that pain was present only occasionally, when he had a severe fit of coughing, and when he lay on the left side; that about three weeks after his first seizure he had hemoptysis, which continued with more or less severity for three weeks more; that it then ceased, and other symptoms set in. He became rapidly emaciated; had rigors, followed by night sweats; constant harassing cough, with fetid expectoration and complete loss of appetite, but no pain in any part of the chest.

With these symptoms he was admitted into the hospital, and in addition he presented all the appearances of a person labouring under some fatal organic disease. His skin was burning hot, dry, and of a whitish waxy hue; the mucous membrane looked unhealthy; the tongue was moist and clean; bowels confined; urine scanty, and depositing lithates; pulse 120, small and weak; there was extreme fetor of the breath, perceptible even at a distance from the bed; he has frequent cough, with expectoration of a muco-purulent character, frothy and stained of a rusty brownish colour. This secretion is also fetid, but in a less degree than the breath, and is expectorated with the utmost possible facility.

The physical examination presented clearness on percussion on the right side, comparative dulness on the left, both anteriorly and posteriorly; respiration was free, and louder than natural on the right side. On the left there were increased resonance of the voice, and bronchial breathing at the apex of the lung, and from the angle of the scapula downwards there was muco-crepitating ralē posteriorly. No evidence of a cavity could be discovered.

There was no pain complained of in any part of the chest, and the patient could lie in any position without distress. Moreover, there was no difference in the measurement of either side; there was no dyspnœa, and in fact so little did he suffer, that he often assured me his chest was quite sound, and he would

be quite well and able to resume his work if I could remove the bad smell and improve his appetite.

It is unnecessary to detail minutely the progress of the case. Suffice it to state, that after some treatment the secretions were improved, the râle disappeared from the base of the left lung, there was a slight appearance of general amendment, and the fetor was diminished under the influence of solution of chlorinated soda. But the improvement was only temporary; all his symptoms increased in severity. The cough became incessant, the expectoration very profuse; so much so that when he lay on the right side it flowed from his mouth continuously. The fetor was intolerable. He had neither vomiting nor diarrhœa, and his intellect was clear to the last. Without the addition of any new symptom, he died in five weeks after his admission.

A fortnight before he died there were well-marked signs of a cavity at the apex of the left lung, but previous to that date we could not be satisfied that one existed, although he was carefully examined by some medical friends, and almost daily by myself, and although he had fetid purulent expectoration.

While under observation, this case excited considerable interest, and, in the absence of a correct history, a good deal of speculation as to its precise nature. Was it tubercular disease of the lung? The appearance of the patient, the situation of the physical signs in the apex of the left lung, the hemoptysis, followed by hectic and wasting, made such a diagnosis anything but improbable.

But then, the suddenness of the attack, *the limitation of the disease to one organ*, and the fetor, although such symptoms have occurred in phthisis, threw a doubt upon this opinion. Was it cancer of the lung? The waxy hue of the skin, the limitation of the affection to one side, and the fetid expectoration, together with the signs of consolidation of the lung, made this view probable. But, then, there was no pain, no dyspnœa, no flattening or retraction of the side, and the dulness on percussion was not complete, nor did it extend beyond the mesial line. The absence of these signs, the suddenness of the attack, and its brief duration, threw more than a doubt on such a diagnosis.

Was it empyema? Clearly not. There was neither retraction nor dilatation of the side; the dulness was not complete, and was unaffected by change of posture; there was no displacement of the heart or mediastinum, and there had been hemoptysis, a symptom not belonging to empyema.

Was it simple pneumonia, ending in abscess? The he-

moptysis alone constituted our grounds of hesitation as to such a conclusion. In fact, the case was peculiar in presenting some of the symptoms of each of these diseases, so as to throw doubt on every diagnosis. And of the real origin of the affection there was not the remotest suspicion; for the patient, although repeatedly questioned as to his previous history, never alluded to an accident having occurred to him.

The post-mortem examination alone revealed the true state of the case. An examination of the body was made in presence of my colleague, Dr. Neligan, and the class of the hospital. On opening the thorax we found the left lung, adherent around the apex, free inferiorly. Endeavouring to detach it from the walls of the chest, the resident pupil, Mr. Constable, forced his fingers with very little difficulty into an abscess, situated in the posterior portion of the superior lobe, and met with a fish-bone lying loosely in it, which he removed. On further examining the organ, we found it occupied by a series of abscesses passing through the centre of the lung, from its apex to its base, and communicating with one another, none, however, approaching the surface, save one, situated below the clavicle, which, as I have already stated, was diagnosed a few weeks before death. These cavities were not very large, but they established a kind of channel running through the lung, and were surrounded by condensed structure. The right lung was perfectly healthy. There was not a trace of tubercle in either.

The mucous membrane lining the larynx, trachea, and left bronchus, showed the results of inflammation. It was softened, and of a dusky red colour. These appearances were confined to the parts enumerated. The right bronchus from the bifurcation downwards was quite healthy, and presented a natural colour and appearance.

The œsophagus was examined, and found in its normal condition, as were all the other organs, save the liver, which was somewhat enlarged, merely from congestion.

Surprised at the discovery of a foreign substance in the lung, the existence of which the patient never hinted at during life, I sought out his wife to obtain her history of the case. She stated that her husband was of intemperate habits for several years past, and that on a Friday, sixteen weeks ago, he came home rather drunk. She had a small fried fish—a plaice—ready for his dinner. He appeared very hungry, and commenced his meal by pulling off the skin of the fish, and stuffing it into his mouth. Immediately he began to cough,

and exclaimed he was choked. His breathing was not much interrupted after the first paroxysm of coughing was over, but he felt something sticking in his throat, and ate a crust of bread to dislodge it. This did not succeed. His uneasiness, however, was not very great, and he went to sleep.

Next day he complained of the feeling in his throat, but he went to his usual work, and was attacked during the day with fits of coughing and vomiting. The following day was Sunday, and not finding himself relieved, he tried to get rid of his uneasy sensations by drinking a considerable quantity of whisky.

On Monday he first applied at a dispensary, but it is not known what history he gave of himself. His symptoms, however, at that time could not have been very urgent, and the medical attendant must have looked upon his as an ordinary case of cold, for he prescribed only a cough-bottle and pills.

His symptoms were unchanged for five or six days, but at the end of that time he felt a pain below the left clavicle, and could not lie on that side, at the same time his cough was more frequent, and he was not able to work. He again applied at two or three public hospitals; told how he suspected a bone, or some other foreign substance, had entered the air-passages; and was examined by physicians of great experience, who assured him he was mistaken as to the presence of an extraneous body in the air-tubes. This appeared to have satisfied him on the point, but he felt no relief as to his symptoms. The cough increased, and hemoptysis came on. He grew weak, lost flesh, was unable to work, and remained at home for some weeks, until he was admitted into hospital by me.

Such is the substance of the wife's story, and there can be no reasonable doubt as to its accuracy in all essential points. The bone found in the lung, and represented in the annexed woodcut, corresponded exactly with the bone of the hyodean segment of a small plaice of the same size as his wife said she dressed for his dinner, and came away with the skin of the fish, when torn off as she described was done by her husband.

There can be no doubt whatever that this foreign substance entered the air-passages through the glottis. In this case the absence of any external wound and the integrity of the œsophagus appear to me quite conclusive on the point. But if additional proof was required, we have it in the knowledge of the



fact, attested by numerous cases on record, that there is scarcely any substance, however singular, which may not enter the air-passages.

The animal, the vegetable, and the mineral kingdoms have each furnished their samples, presenting a most curious and diversified catalogue.

In one case a child eleven months old inhaled a shawl pin two inches in length, and with a head nearly as large as a marble^a.

In another a man lost his life by the intromission of a piece of sponge into the trachea^b.

In a third the larynx of a goose became impacted in that of a boy twelve years old^c.

In a fourth instance a man inspired a puff dart, an instrument made of a nail wrapped with worsted at one end, and used for blowing through a tube; and Pelletan's case, related in his Clinical Surgery, in which a child two years old inhaled a piece of the jaw-bone of a mackerel, and recovered, is well known^d.

Dr. Watson in his Lectures relates a case in which a nobleman's son, while riding in a carriage near Paris, happened to have an ear of rye in his mouth. The carriage jolted, and the rye disappeared. Some time after, pulmonary irritation set in, attended with hectic fever and fetid expectoration. The boy died, and the ear of rye was found in an abscess common to the right lung and the liver.

Other cases might be quoted, but these few are sufficient to prove that substances the most unlikely from their form and size to pass through the rima glottidis have nevertheless entered the larynx. Indeed, this fact has been long since established and explained by the late Dr. Houston, in recording a case where a large molar tooth had passed into the larynx, and therefore we cannot hesitate in concluding such an occurrence happened in the present instance.

When a foreign body has passed the rima glottidis, the situation it may occupy will greatly depend upon its size, form, and weight. If the substance be large, rough, and irregular in shape, it will most probably be arrested in the larynx, while, if it be small, smooth, and rounded, it will either move up and down the trachea with inspiration and expiration, or it will descend into the bronchial tubes and remain impacted in one of

^a Dr. Mott of Philadelphia, in Cooper's *Surgical Dictionary*.

^b *New Hampshire Journal of Medicine*, 1852.

^c *London Medical Gazette*, 1850.

^d *Provincial Medical and Surgical Journal*, July, 1849.

them. If, again, it be slender and sharp-pointed, like a nail, pin, or fish-bone, it may become fixed in any part of the walls of the larynx or trachea, unless indeed it enters the aperture of the larynx in a vertical direction, when it may fall at once into the bronchial tubes. This must have been the way in which the bone in the present instance entered the air-passages—its length (two inches) would prevent it from passing through the rima and the division of the bronchus in any other than a vertical position. Such being the case, we can well imagine that it afforded little obstruction to the respiration while it remained in the bronchial tube, as the air could pass in and out on either side of it; consequently, there were no well-marked physical signs of obstruction, and the physicians whom he consulted, in the absence of such evidence, altogether discredited this man's statement.

But even if physical signs of obstruction did exist, and were recognised, their occurrence on the left side would greatly tend to obscure the diagnosis, and render it more than ordinarily difficult. "For," as Dr. Stokes remarks, "the cases in which a foreign body enters the right bronchus are so much more numerous than those in which it occupies the left, as to make the signs of irritation and obstruction in the right lung important diagnostics of the accident in question." And a later writer^a on the subject goes farther, and states that—"The number of cases of death without operation and without expulsion of the offending body, is 21; in these the substance was situated in 11, in the right bronchial tube; in 4, in the larynx; in 3, in the trachea; in 1, partly in the trachea and partly in the larynx; in 1, in the 'lung'; and in 1, in the right thoracic cavity. *In not a single instance did it occupy the left bronchial tube.*" "In 34 cases subjected to operation or general treatment, the extraneous substance was situated only 4 times, certainly, in the left bronchial tube." Here, then, we have two Tables, containing no less than 55 cases, and only in 4 was the offending substance situated in the left bronchial tube. These facts quite justify the prevailing opinion as to the greater frequency of foreign bodies being situated on the right side; and so important a fact has been variously explained or accounted for by several writers. Some attribute the phenomenon to the greater dimensions of the right bronchus, in consequence of which the air is supposed to enter with greater force and velocity, and so direct bodies to that side; others, that the right bronchus forms a more obtuse angle with the trachea than its fellow of the op-

^a Gross on *Foreign Bodies in the Air-passages.*

posite side. "But the true cause," as Dr. Stokes remarks, "will be found in the anatomical disposition of the trachea at its bifurcation, where we may observe that the projection or septum, dividing the right and left bronchi, is not in the mesial line, but decidedly to the left of it, so that a body passing through the glottis will be directed to the right bronchus." "For this observation," he adds, "I am indebted to my friend Mr. Goodall." It is most certainly one of great interest and value, and doubtless the anatomical arrangement of the mucous membrane has a great influence in directing the course of bodies of a rounded form and moderate size, which are capable of moving freely in the trachea. But in the present instance it is probable the curved form and pointed extremity of this bone influenced its direction, and caused it to deviate from the ordinary channel.

We see, then, that foreign bodies are rarely found to occupy the left bronchial tube, and if we except a case related by Dupuytren, in his *Leçons Orales*^a, in which a small coin, movable for five years, became fixed in the bronchial tubes, inducing phthisis, and causing death at the end of ten years, and in which the coin was discovered in a tubercular cavity of the lung (it is not stated which lung), the present is the only instance, so far as I know, of a foreign body being found in a pulmonary abscess, and the first recorded in which it was discovered in the left lung. Taking these facts into consideration, the diagnosis of this case must have been both difficult and uncertain.

It is to be regretted that the early history of the case is so imperfect, and that no account of the physical signs, if any existed, could be obtained. From what we could collect, I have already inferred that the symptoms were not severe or urgent, and, perhaps, altogether belonged to irritation and inflammation of the mucous membrane. There were no fits of suffocation, no dyspnoea, no symptoms of obstructed respiration. Such a result succeeding the intromission of a foreign body into the air-tubes is not, however, uncommon. Lacrois gives an instance in which, after the first few minutes, the patient did not experience a bad symptom for an entire year; and Dr. Struthers relates a case which very much resembles the present one as to its symptoms,—the great difference being its more chronic nature, and the situation of the foreign body.

Thomas Neal^b, a footman, aged 22, while eating part of a fowl, was suddenly seized, while in the act of laughing, with a violent fit of coughing and a feeling of suffocation; he became

^a Tome iii.

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^b Dublin Medical Press, November 24, 1852.

blue in the face, felt a sharp pain in the chest, and was sensible that some of his food had entered the windpipe. These symptoms subsided in half an hour, and never returned. He vomited freely from an emetic, and could swallow fluid and solids without difficulty. About an hour after the accident a tickling cough, accompanied by a wheezing in the throat, set in, and continued to trouble him occasionally, but gave him so little inconvenience, that he pursued his usual business as if nothing had happened. He was, however, still convinced that there was something in his windpipe. About three months after the accident the cough began to be accompanied by white frothy sputa, which, without any other change in the symptoms, gradually increased in quantity during the next twelve months. About six weeks after this he observed, for the first time, that the sputa were tinged with blood, and had a fetid odour. In 1848 the fetor of the breath became so marked that he was obliged to quit his situation, and he had considerable discharges of pure blood, amounting occasionally to so much as half a pint. In 1849 he entered the Edinburgh Royal Infirmary, having a good deal of cough, attended with profuse bloody and fetid expectoration. The left side was throughout resonant on percussion, with a puerile murmur, but without any râle. The opposite side was dull over the inferior three-fourths of its extent, both in front and behind, but particularly below the nipple. The local resonance was found throughout increased; a gurgling râle was heard about the middle of this side, posteriorly over a space two inches square, and at several other points the respiratory murmur was very harsh, and obscured by mucous and sibilant sounds. During the next three months there was but little change in his condition; but in March, 1849, he gradually became worse; the breath and sputa had a gangrenous odour; the expectoration was very profuse; and there was great *dyspnæa*, with *excessive weakness and occasional feeling of suffocation*. The right side was universally dull on percussion, and all natural respiratory sound was absent. The left side, on the contrary, was unusually resonant. He expired on the 29th March, 1849. The right bronchial tube, at its middle primary division, contained a small piece of bone, quite loose, clean, and of an irregularly elongated form, with several sharp spiculæ. The mucous membrane at the part was thickened, but quite free from ulceration and unnatural vascularity. The right lung was firmly and almost universally adherent, and contained numerous little cavities, varying in size from that of a hazel-nut to that of a pea. An abscess, about the volume of a small orange, and filled with a brown dirty-

looking fluid, of a cream-like consistence, was found in the apex of the organ. Another, but smaller one, existed at the middle of the lung posteriorly; it was lined by a thick, dense, false membrane, and opened directly into a bronchial tube, the size of a crow-quill, at the other end of which the foreign body was discovered during the progress of the dissection. The left lung was healthy.

We cannot fail to be struck with the great similarity of this case and mine in some respects: the early symptoms and the sensations of both patients were almost identical,—in the setting in of the cough, the occurrence of hemoptysis, and the existence of fetor, they are quite alike. The physical signs, too, in the advanced stage of both, reversing their situations, are very similar. They differ, however, in the absence, in Brady's case, of any dyspnœa or feeling of suffocation, and in the more acute form and rapid progress of his disease. This might be accounted for by the penetrating shape of the foreign body, which forced its way quickly into the substance of the lung, where its presence excited inflammation more rapidly than if it had remained in the bronchial tubes.

Other cases are recorded by various writers, proving that the presence of a foreign body in the air-passages is not necessarily attended with physical signs of obstruction in the lung; and, amongst others, the case of Mr. Brunel, treated by Sir B. Brodie, is confirmatory of this remark. In his case the chest was often examined, and under various circumstances, yet no abnormal sounds were discovered in the lungs. But it is unnecessary to adduce further proof; the fact is admitted, and experience confirms its correctness.

In concluding these observations, a few words on treatment may not be inappropriate.

As I have already stated, there is scarcely any case more embarrassing to the practitioner than one like the present. He is called upon suddenly, often under great disadvantages, and with an imperfect history of the accident, in the first place, to decide upon the presence of a foreign body in the windpipe, and next to adopt the best means for its removal; for he well knows that the presence of a foreign body in the air-tubes is always a dangerous accident, and if it be allowed to remain there will, sooner or later, prove fatal.

The duty of the medical attendant then is, in the first place, to ascertain, if possible, the presence of a foreign body, and its precise situation; and having satisfied himself as to its existence, and the absence of pulmonary disease, he should next open the trachea. Mr. Liston says:—“No trust is to be

put in any therapeutic means, even in the most chronic cases: errhines, emetics, and demulcents, are alike useless: an opening must, sooner or later, be made in the trachea." And a later writer^a says:—"The only real safety of a person labouring under a foreign body in the air-passages consists in bronchotomy." It is true that various substances may be ejected spontaneously, or through the intervention of art, as the use of emetics and sternutatories, or even by simple inversion and succussion of the body. "But those cases are the exception, not the rule. . . . As long as the extraneous substance remains in the windpipe, the patient is in constant danger of being suffocated; or, if he escape so horrible a death, of perishing from inflammation and its consequences. The proper practice therefore is, in all cases, without exception, to perform bronchotomy as soon as possible after the accident. The artificial aperture effectually prevents spasm of the muscles of the larynx, and thus enables the patient to breathe with greater freedom, at the same time that it prevents the foreign body, if it do not escape at once, to play up and down the air-tubes with comparative impunity."

Both these writers assume that the physician is satisfied of the existence of the foreign body in the air-tubes, and that its presence is manifested by physical signs or urgent symptoms. But how should we act in a case like the one I have just narrated, where there were no physical signs nor urgent symptoms; nothing but the statement of the patient to enlighten us? No doubt, it may be said we should watch the case closely, and wait until symptoms arise demanding operative interference; but it is not clear they ever did arise in this instance, nor that symptoms pathognomonic of a foreign body in the windpipe manifested themselves. The substance, being sharp-pointed, quickly fixed itself in the air-passages, and did not move up and down so as to cause fits of suffocation, nor did its size obstruct the passage of air into the lungs; but it lay there, the source of fatal irritation and inflammation. What then should be done? Would we be justified in opening the trachea, relying on the mere statement of the patient?

I must leave the question still *sub judice*; but I confess it appears to me to have been the only practice that could have given this patient a chance for life. We had to choose between opening the trachea unnecessarily, and allowing our patient to die for want of such an operation.

^a Gross on *Foreign Bodies in the Air-passages*, p. 207. 1855.

ART. XV.—*Account of a Case in which Death was occasioned by a Fish-bone penetrating the Aorta through the Oesophagus.*
By WILLIAM COLLES, Surgeon to Steevens' Hospital.

I AM induced to place the following remarkable case on record as an example of how death may be suddenly occasioned by a very simple cause,—a small fish-bone sticking in the oesophagus while in the act of being swallowed. I am not aware that a precisely similar accident has ever before been published.

The following is the report of the case by Mr. Tarleton:—

John Bryan, aged 56, a labourer, was admitted into Steevens' Hospital, March 30, 1855. About 3 or 4 o'clock the day previous to his admission, while eating his dinner, he swallowed a fish-bone, which, he states, he felt cutting him very much at the time "in his chest" (his own words), the cutting pain being increased exceedingly by the act of swallowing. Immediately after, he commenced to spit up large quantities of blood of a dark colour, which, however, soon changed its character, being bright red. He did not apply for admission into hospital till 12 o'clock the next day. He then complained of acute pain in his chest, and of great weakness. He had a blanched appearance, and a decidedly hemorrhagic pulse. Immediately after his admission he vomited up a fish-bone about an inch long, of a very irregular shape, having a number of sharp points and cutting edges; an accurate representation of which is given in the annexed woodcut^a. He continued to vomit up a good deal of blood throughout the day, but not so much as at first; the quantity gradually diminishing until 9 o'clock the same evening, when he died.



Post-mortem Appearances.—On opening the thorax, about three ounces of reddish-coloured serum were found in each pleural cavity, and about an ounce of fluid of a similar appearance in the pericardium. The posterior mediastinum was filled with coagulated blood. Upon removing the oesophagus and slitting it up, there was seen upon its posterior wall an oblong irregular opening, about half an inch in length from above downwards; the opening corresponding with the termination of the descending portion of the arch of the aorta, through which there was a slit or tear exactly opposite to that in the oesophagus, but differing from it in being smaller and more irregular. Upon examining the abdomen, a large clot

^a Dr. Carte has identified the bone as being that of the pre-operculum of the herring.—ED.

of blood was found in the stomach, and the small intestines were filled with a similar fluid.

Of the cause of death here there can be no doubt,—the opening through the œsophagus into the aorta having been evidently produced by the sharp edge of the fish-bone which had been displaced and rejected by vomiting some hours before death. It proves how great an amount of force is exerted in the mere effort of swallowing, sufficient to cause such a cutting instrument as the edges of this bone presented to penetrate through the coats of the œsophagus and aorta. Had a probang been employed in this case, no doubt the cause of the injury would have been ascribed to its use; but I doubt that a probang is ever introduced with such force as to drive a foreign body through the firm structures that exist here when they are in a healthy state.

ART. XVI.—*On the Rhythm of the Heart of the Fœtus in Utero, and of the Infant after Birth^a.* By FLEETWOOD CHURCHILL, M. D., M. R. I. A., Fellow of the King and Queen's College of Physicians in Ireland.

HAVING lately undertaken some investigations into one or two points connected with the foetal circulation, I shall lay a brief summary of the results before the profession. It is to the kindness and courtesy of the late Master of the Rotundo Hospital, Dr. Shekelton, that I am indebted for most of my opportunities for research; and it gives me great pleasure thus publicly to return my warmest thanks to him and to his able and intelligent assistants, Dr. Sinclair and Dr. Atthill, for their active and careful co-operation.

No doubt, the rhythm of the foetal heart, and that of the infant after birth, as compared with that of the adult, is but a very small portion of the information to be obtained by a stethoscopic examination; but we must remember how much has been settled by preceding observers, and recorded in different publications; and I should think it a very unreasonable thing in me to attempt even a brief recapitulation of the present state of our knowledge upon the subject. But, so far as I can discover, comparatively little attention has been paid to the character and rhythm of the double sound of the foetal heart. I have carefully consulted the authors whose writings I possess, and I have

^a Read at a meeting of the Obstetrical Society, January 27, 1853.

examined the historical sketch prefixed to the admirable work of M. Depaul; and from the discovery of the pulsations of the foetal heart by the stethoscope by M. Mayor, of Geneva, in 1818, I find little or nothing on the exact subject of this paper stated by Kergaradec, Maygrier, Lenormaud, Foderè, Ulsamer, Lau, Haus, Desormeaux, Gardien, Ritgen, Carus, Fergusson, Naegelè, Bodson, Dubois, Monod, Winckel, Kennedy, Hohl, Montgomery, Kilian, &c., though on most other points they are full and accurate. They furnish most careful and valuable information of the position in which and the extent over which the pulsation of the foetal heart is audible; the period of pregnancy at which it is first heard; the relative frequency at different periods; the value in the diagnosis of single or double pregnancy, &c.; but they are defective in an exact specification of the number of sounds heard, and of their relative character and rhythm. The main points on which these authors, or the greater number of them, are agreed, and which concern our present inquiry, are the following:—

1st. That the pulsations of the foetal heart range between 120 and 160 per minute; that they have been observed so low as 90 (in the normal state, when influenced by ergot, they may be much slower), and as high as 190 or 200. The average is probably about 136, as M. Naegelè, Jun., found, judging from 600 cases.

2nd. That "the beat is double,"—but it is not generally specified whether the writer meant, as I suppose, that the "double beats" amount to 240 and upwards; and from some incidental expressions their meaning might seem doubtful.

3rd. The "double beat," or, more correctly, the double sound of the heart, is described by some as "short, quick, and regular;" and by others likened to the ticking of a watch under the pillow. Kilian speaks of the "double pulsations" succeeding each other with the greatest rapidity.

4th. Very interesting observations have been recorded as to the fluctuating rapidity of the foetal pulsations; as to the relation between their force and the strength of the fœtus; as to the extent of space in which they are audible; and the effect of the evacuation of the liquor amnii upon their intensity. On the former of these subjects there is but little difference of opinion, but on the latter a very wide one—Kilian believing that the pulsations are more distinct after the evacuation of the liquor amnii, and others that they are less so.

One writer there is, however, whose work is at once the fullest and the most minute, I mean M. Depaul, who has entered into the question of the double sounds and their rhythm

with more detail; but as I have been obliged to differ from his opinion in one point, I have reserved my notice of his work until stating the results of my own observations.

But I would premise one or two remarks:—1. I use the term “pulsation of the heart” to signify its single action, just as we speak of the pulse meaning a single vibration; and for what has been termed its “double beat,” “double pulsation,” I substitute “double sound.” 2. By the rhythm of the heart’s action, I understand the relation of time which the two sounds bear to each other, and to the entire period occupied by a pulsation. 3. By way of establishing a standard of comparison, both as to the rhythm and the relative force of each sound, and also as a guide to the determining which is the first, and which the second sound, I beg attention to the following extract from the last edition of Dr. Carpenter’s Treatise on Human Physiology. He observes:—“When the ear is applied over the cardiac region, during the natural movements of the heart, two successive sounds are heard, each pair of which corresponds with one pulsation; there is also an interval of silence after each recurrence, and the sound that immediately follows this interval is known as the *first* sound, the other as the *second*. The *first* sound is dull and prolonged; it is evidently synchronous with the impulse of the heart against the parieties of the chest, and also with the pulse as felt near the heart; it must, therefore, be produced during the *ventricular systole*. The *second* sound, which is short and sharp, follows so immediately upon the conclusion of the first that it cannot take place during the *auricular systole*, as some have supposed, but must be assigned to the first stage of the *ventricular diastole*, when the auricles are also dilating. With regard to the relative duration of the two sounds, and of the interval, widely different estimates have been formed. Thus, Laennec considered the lengths of the periods of sound and silence to be respectively three-fourths and one-fourth of the interval between one pulse and another; by Dr. Williams, and by Barth and Roger, the relative lengths of these periods have been estimated at two-thirds and one-third; whilst the recent experiments of Volkmann (made by adjusting two pendulums to vibrate precisely in the two periods) indicate that they are almost precisely equal.” He adds in a note: “The difference between these two sounds is well expressed (as Dr. C. J. B. Williams has remarked) by articulating the syllables, *tubb, dup*”^a.

Now, from this extract it appears that when the two sounds follow each other quickly, succeeded by an interval of rest, the

^a *Principles of Human Physiology*, Fourth Edition, p. 480.

sound recurring next after the interval of rest is to be considered the first sound ; and also, according to Volkmann, the rhythm may be expressed in figures by dividing the time which elapses from one pulsation to another into four portions, the two first representing the first and second sound, the two last the interval of rest, thus, 1 2 3 4. Without entering upon the question of its absolute accuracy, it may at least serve as a general standard of comparison. Let me also observe, that I am quite aware that when this rhythmical action is changed, as it may be in the adult, and as we shall see it is in infants, it may be extremely difficult sometimes to decide which is the first sound and which the second ; but where it is perceived, I believe that the rule laid down by Dr. Carpenter may be regarded as correct.

I shall now proceed to bring forward the results of observations made upon a considerable number of women and children in the Rotundo Hospital, merely observing that the women were all in the first stage of labour ; in some the pains were trivial and infrequent ; in others more severe and frequent ; but that in all the examination was made during an interval of complete freedom from pain.

The situation in which the sounds of the foetal heart are generally most clearly audible is about midway between the anterior superior spinous process of the ilium and the umbilicus, either on the left or right side, but much more frequently on the left side. If the stethoscope be applied in this situation, two sounds will be heard following each other with great quickness : the one loud, distinct, and easily counted ; the other apparently quicker, shorter, and less loud or distinct, so that it is extremely difficult to count it ; to count both is scarcely possible, as they would amount to 240 or 280, being exactly double the number of pulsations. After examining some forty or fifty cases, I have met with but one case in which the loudness and distinctness of the two sounds were about equal ; in all the other cases they were unequal, as I have described them.

Now, which of these is to be considered the first sound ? If we are to take the analogy of the adult heart, we should fix upon the louder sound as being the first, and this is M. Depaul's opinion, who states that "the first is stronger and more sonorous than the second, which is sometimes so feeble that it is scarcely perceptible." But with this decision I cannot agree.

M. Depaul has observed, and my own observations confirm his accuracy, that "the interval which separates these

double pulsations from each other is greater than that which separates the first and second sound."

Now if Dr. Carpenter's rule be correct, as I believe, that the sound which immediately follows the longer interval of rest is the *first* sound of the heart; then all our observations showed us that this was the quick, short, and less loud sound, which was instantly followed by the louder and more distinct *second* sound, and then by an interval of rest. After most carefully testing this opinion of M. Depaul, I can have no hesitation in stating my impression that it is incorrect, and in this I have the concurrence of Drs. M'Clintock, Sinclair, and Atthill. I know of but one way of deciding this question conclusively, *viz.*, by ascertaining with which of the two sounds the pulsation in the funis is synchronous; such a test would of course be difficult, and require great delicacy of observation, on account of the rapidity with which the two sounds succeed each other; but if it were accurately performed, it would be conclusive. Drs. M'Clintock and Hardy are the only authors, as far as I know, who have remarked that the pulsation of a prolapsed funis corresponds to alternate sounds of the heart, but, unfortunately for my present purpose, they do not specify with which of the sounds it is synchronous. I venture to hope that some who may have the opportunity will not allow much time to elapse before they furnish us with information on this point.

Although my observations differ from those of M. Depaul, as to the first sound of the heart, I agree very nearly with him as to the rhythm. To my ear the two sounds of the heart follow each other instantly in almost all cases, and are succeeded by an interval of rest, about equal to the duration of the two sounds; in fact, the rhythm is nearly that of the adult heart, and may be expressed as 1 2 3 4; if there is any difference, it appears to me that the interval between the first and second sounds is relatively less than in the adult; but the difficulty of speaking precisely about such momentary occurrences will be easily understood.

Again, we found some differences in different patients, as was to be expected; but it was remarkable that the second or loud sound seems more permanent in its characters and less subject to change or variation than the first or weaker sound. When the interval between them was longer, and the two sounds unusually distinct, it did not appear to us that the variation was due to a change in the second sound, but in the first.

Lastly, whilst we found that we could distinctly hear the two sounds over the situation of the foetal heart, we observed the greatest difference as to the extent to which each was audible over the abdomen. What I have called the first sound, in the majority of cases could not be heard more than three inches in any direction from the situation of the foetal heart; the second sound, on the contrary, was audible to a very considerable distance, and in all cases was easily counted alone. From the experiments we made, I am convinced that in many of our investigations as to the existence of pregnancy, we have heard only this sound, and that, being satisfied with it as a sufficient evidence of that condition, we have either mistakenly coupled together two of these second sounds for the "double beat," which would justify the comparison to the ticking of a watch or the rhythm of the infantile heart; or, assuming that the sounds must be double, we have multiplied this sound by two (without hearing both), which will undoubtedly give the correct number of sounds per minute.

At the time that I was making the foregoing investigations in the Lying-in Hospital, it occurred to me to compare the sounds of the foetal heart with those of the infant shortly after birth; and this inquiry I have carried to a considerable extent, both in the hospital and among my private patients. I found that the rhythm of the sounds of the heart had quite changed, even in a baby an hour or two old. The two sounds were of equal strength and loudness, and divided the period of each pulsation equally, i. e. the rhythm was now 1 2 3 4. The second sound seemed much the same as before, somewhat louder, because heard under more favourable circumstances, but the great change seemed to be in the first sound, in its intensity and duration, and in the interval which divides it from the second sound. Except that the sounds are louder, they might now be pretty accurately compared to the ticking of a watch, and only that we can time them by the pulse, it might be very difficult to decide which is the first and which the second sound. Even as it is, it is not always easy, for the pulse at the wrist of a new-born infant is not always preceptible.

It now became an object of interest with me to ascertain how long this peculiarity of rhythm continued, and at what age it assumed the characters of the adult rhythm. I have taken every opportunity since of examining the hearts of infants of all ages. In all the cases yet examined under a year and a half old, I have always found the infantile rhythm: the sounds equally loud, equidistant, and the intervals equal. In one child, a year and ten months old, the two sounds had evi-

dently approximated, and the first sound was the longer and stronger. At three years of age, the two sounds have in all cases had the character and rhythm they present in the adult.

These are the results of my investigations up to the present time; whether they may be confirmed or corrected by other observers, or whether they may be of any and of what physiological importance, time alone can show. If they are correct, it will be satisfactory to have even a small addition to our knowledge; if they are erroneous, I shall be the first to welcome their overthrow. I think it would be quite premature at present to attempt any explanation of the phenomena I have noticed; I am far more anxious to make sure of the facts; and my especial reason in bringing the matter before the profession so soon, is the hope of engaging others to test most carefully and rigidly the accuracy of my observations. Instead, therefore, of any theoretical explanation, or physiological or pathological influences, I shall conclude by simply enumerating the deductions which my observations seem to me to justify.

1. That the pulsations of the foetal heart range from 110 to 160 per minute, the average being somewhere about 136, and the audible sounds double, therefore ranging from 220 to 320.

2. That of the two sounds, the first is the weaker and less distinct; the second loud and distinct; the first audible only within a short distance of the foetal heart; the second over a considerable extent of the uterine tumour.

3. That the rhythm may be expressed by dividing the entire period of a pulsation into four parts, and placing a dot under the figures, according to the succession of the two sounds, as 1 2 3 4, and an accent over the louder sound.

4. That immediately after birth, the first and second sounds of the heart become equally loud and distinct from an increase in the first sound.

5. That the rhythm changes, and may be expressed thus, 1 2 3 4.

6. That this peculiarity of the rhythm continues for about a year and a half, and then gradually changes to that of the adult, expressed thus: 1 2 3 4, with the first sound stronger and louder than the second.

March, 1855. I have taken every opportunity of investigating this subject since the foregoing was read before the Dublin Obstetrical Society, and I find no reason to alter the opinions therein expressed.

ART. XVII.—*On the Union of Fractured Bone.* By MAURICE H. COLLIS, M.B., F.R.C.S., Surgeon to the Meath Hospital, &c.

THAT fractured bone is repaired on similar principles to solutions of continuity in soft parts, is a truth with which surgery has only become familiar of late years. The ingenious and complicated theory of provisional and permanent callus is now replaced by one as superior in its simplicity, as the modern appliances for fracture are to the cumbrous apparatus of former days. This improvement in scientific accuracy enables us to explain phenomena which are inconsistent with the older theories: such, for example, as the absence of callus and rapidity of cure, where perfect rest and apposition have been attained; as in the following case, for example:—

William Reynolds, aged 30, was admitted into the Meath Hospital April 3, 1854, suffering from fracture of both bones of the leg, the result of direct violence. The fibula was broken at the centre; the tibia was broken a little lower in two places, leaving the central fragment about three inches in length: both fractures being partly oblique, and partly transverse. The man was slightly under the influence of drink when I saw him, eight hours after the accident; he was inclined to be feverish and restless; and there was some probability of his deranging the fracture if put up in the box or side splints. I therefore applied the starched bandage and pasteboard splints after the manner adopted by Baron Seutin. The evaporation from the apparatus, joined to its equable compression, kept down local inflammation and effusion; and upon slitting it up next day, the fracture was found perfectly in apposition, and free from all symptoms of irritation. It is unnecessary to detail the subsequent history of the case from day to day; suffice it to say, that in four weeks union was perfect, without the slightest irregularity in either of the bones to show where the seat of fracture had been. No provisional callus had been thrown out, yet the man was able to walk with the assistance of a stick at least ten days or a fortnight sooner than usual.

Facts like this must have come under the cognizance of most surgeons; but yet their application to the theory of the union of bone has been, until late years, imperfectly perceived. Such cases tend to show that the absence of a provisional or ensheathing callus is not only no evil, but that it tends in a direct and absolute manner to shorten the period which is required for union. There is a plain connexion between the

amount of callus and the length of time required for consolidation. When from any cause the callus is considerable, recovery is retarded, and there is subsequent debility in proportion. The presence of callus is further injurious,—it is a direct cause of œdema in the limb, both by its mechanical obstruction to the vessels, and by its inducing a hyperemic condition in the neighbourhood of the fracture: this hyperemia is prolonged until the vessels have removed the superfluous mass of bone. We, consequently, find that fractures which are hard to retain in position, such as Colles' or Pott's fractures, or fracture of the upper part of the humerus, are prone to be followed by long-continued œdema and weakness; and these are precisely the kinds of fracture that throw out callus in greatest abundance. It is evident, therefore, that the mode of union by provisional callus is not the typical and simplest form; and that where nature has recourse to it, it is not because it is the best possible, but because it is the best available, means of cure.

If we turn to the simple laws which regulate the union of divided soft parts, we shall find the clue to the explanation of the union of bone. When a solution takes place in the continuity of soft parts, repair is effected by the organization of a minute layer of plastic lymph which is poured out upon the divided surfaces. Should any substance intervene, so as to prevent perfect apposition, it must be removed before union can take place. The organized lymph surrounds it on all sides; if it is capable of absorption the blood-vessels of the organized lymph remove it; if not, some of the plastic exudation is checked in its development into cells, and is converted into pus, which floats it away.

The source of the plastic exudation deserves attention; the efforts of nature tend to close the mouths of the divided blood-vessels, and any exudation from them must partake largely of the nature of a foreign body; for though some parts of a coagulum may be organized, yet the greater part of it must be removed before that can be effected. The exudation is rather poured out by the walls of the capillaries, and is in proportion to the intensity of the reactionary inflammation: if it is excessive, it also impedes reunion, either by a reflex pressure on the vessels which are its source, or by an imperfect organization; the latter condition gives rise to suppuration, the former to a structure of low vitality. I have remarked that, in proportion to the energy of all organizing movements, the plasma which is their seat is converted into nucleated cells, which become subsequently developed into fibres; and into the interstices of these fibres the neighbouring capillaries are extended; while

by delaying the process, in its early stages, a form of organization is produced, of lower vitality, because less capable of being permeated by blood-vessels; in it there are fewer areolæ, owing to an imperfect development of fibres, and the tendency of such as are formed is to a rectilinear arrangement. This tissue forms the chief substance in the cicatrices of burns, and in other dense and imperfectly organized new structures.

The special organization of any new growth, whether healthy or diseased, appears to have one or other of these forms as its basis or starting-point; and a second process, either modelling, or of interstitial deposit, is necessary to stamp such growth with its individual peculiarities. Thus, for example, in cicatricial tissue, which connects divided muscle, whether it be areolar or indistinctly fibrous in the first instance, proper muscular tissue will be found after a longer or shorter time; it may be laid down without regularity at first, but, in course of time, it will assume somewhat of a normal arrangement, and this result will arrive sooner in proportion to the organization of the basis; it will be quicker in the areolar basis, and may never arrive in the fibrous; and in the intermediate forms will be found according as the areolar arrangement predominates. In like manner the yellow elastic tissue is found in old cicatrices of skin; and in all structures the same law of repair appears to hold.

I think it probable that similar laws hold morbid growths, or at least that we shall ultimately be able to refer them to similar fundamental principles. The union of fractured bone, whether perfect or imperfect, can certainly be explained by them. To take the most perfect and rapid mode of union, such as should be the object of the surgeon to attain as far as possible in every case, we find the phenomena to be, generally speaking, as follows. The blood-vessels of the bone and periosteum are ruptured; no displacement of the fracture occurs, so that their mouths are at once closed up; local reaction sets in rapidly, and the result of it is an effusion of plasma between the fragments from the vessels of the bone and periosteum; such molecules of bone as have lost their vitality from the fracture are removed by absorption, and the broken ends become by this means more vascular and soft. This process, which causes the ends of the broken bone to become apparently rounded, is active in proportion to the vascularity of the bone; it is in fact this preponderance of vascularity on the surfaces of a long bone (internal and external), that causes the edges to round off. The plastic fluid, which lies between the broken

ends, is rapidly organized into granular nucleated cells; many of these cells become elongated into fibres, and into the interstices of these the capillaries push on.

This organization of the interposed layer of lymph is effected in about ten days. According as the capillaries are formed, the cells and fibres in contact with their walls begin to be the seat of osseous deposit; the granules and fluid which they contain become saturated with the earthy constituents of bone, and, ultimately, their walls and nuclei also. This process of ossification commences with the full development of the capillaries, and is completed in about a month from the time of fracture in the dense long bones of the adult. The time required is directly as the thickness of the bone, and inversely as the vascularity; the more vascular, the more rapidly the union is completed; the thicker the wall of bone, the longer time is required.

This is the primary process of union or cicatrization of bone under the most favourable circumstances. Even when perfect apposition is not obtained by reason of the interposition of small spicula of loose bone, or isolated fragments of muscle, or small coagula, the process is essentially the same; for substances like these are surrounded by the organized plasma, which unites the fracture round them, and, in course of time, removes them by absorption; so that they only partially interfere, and only for a time, with complete cicatrization. There is, however, a higher degree of organization, which consists in the subsequent modelling of the bony cicatrix by development of canals, canelli, osseous corpuscles, &c., such as exist in the rest of the bone. This is slowly effected, and in a manner which does not interfere with the usefulness of the limb. I have not made any observations which throw light upon the mode in which this is done, nor am I aware of any that have been made by others.

In compound fractures the process of union is conducted on similar principles. The only difference which I have observed is, that there is a proneness to throw out exuberant granulations from the injured part. Like the flabby granulations of an ulcer, these consist largely of cells, with very few fibres intermixed; osseous granules are deposited in these cells and in the interstices of them; their deficiency in fibrous arrangement renders them less firm and efficient as a bond of union. If we are to judge by the analogy of the soft parts, and the mode of keeping flabby granulations in check, I suppose we must conclude that these cellular granulations have their origin from bone in the removal of pressure. We see a similar fungating condition of brain in *hernia cerebri* when the pressure of the bony case is removed;

and we have also something analogous to it in another growth, which is chiefly cellular, namely, fungus hematodes, when the support of the integuments has been removed.

These granular cells, also, form the chief constituent of provisional callus, and probably for the same reason. It cannot be poured out unless where pressure is removed to a certain extent; or, in other words, where imperfect apposition of the fragments leaves a space for it. Even when from the violence of reactionary inflammation much plasma is poured out round the bone, and into its medullary cavity, we have every reason to believe that this is absorbed without undergoing any organization, whenever proper apposition and support is given from the first. In very many cases early attention to these particulars prevents this excessive reaction.

This has a practical bearing on the treatment, for the fact of provisional callus being allowed to form, or forming in spite of us, delays the cure. The layer of plasma which lies between the fragments is not converted into bone until the provisional callus is ossified; so that a patient is often allowed to use his limb when the real process of union has only commenced, and a slight injury at that period will suffice to refracture the bone, or, more properly speaking, to fracture the callus; besides, this callus takes ten days or a fortnight longer to ossify than the thin layer between the fragments, when the latter exists alone. Hence patients feel less confidence in using their limbs. There is a plain feeling of impaired strength in the bone: the extra time of confinement to bed weakens their muscular powers, and the oedema which is kept up both from mechanical and vital causes, in such a limb, is a further reason why union by the help of provisional callus should be avoided if possible.

One of the first cases in which I used the starched apparatus of Seutin illustrated many of these remarks. Probably from want of practice in its application, or from dread of applying it too tightly, I failed to procure union without ensheathing callus. The boy was two months before he could bear to lean any weight upon the limb; it was a good deal wasted, and in going about he fell and refractured the bone; it was now put up with considerable care, when we found that the callus was soon absorbed, and union of a firm nature took place rapidly. In several other cases I used this apparatus and found the result exceedingly satisfactory. Fracture of the tibia, or of both bones of the leg, whether uncomplicated or comminuted, when put up immediately after the accident, knit firmly in less than four weeks; the perfect repose in which they are thus kept enables the process of direct cicatrization or union by the first intention.

tion, as it may be called, to be rapidly effected. In oblique fractures of the tibia, whether with lateral or antero-posterior obliquity, it is peculiarly useful. I have also used it in Pott's fracture with good results; even in this fracture I am able to allow the patients to get out of bed and go about with the foot in a sling upon the third or fourth day: it thus enables us to do what Mr. Amesbury proposed to effect with his portable splint, and with almost a certainty of success, and little trouble.

The ligamentous substance which forms the bond of union in cases of what are called false joint presents us with an example of arrested organization; and the various forms in which it is found, as well as the various means of cure, can all be explained by a reference to the laws of union in soft parts. The organization of the plasma may be delayed *in limine*; the fluid may then simply coagulate into what is called nucleated blastema,—a tissue, as I have before mentioned, with little or no cellular or fibrous arrangement, and comparatively devoid of vascularity. When a little more rapidly organized it becomes simply fibrous, the fibres running parallel. In short, every gradation is observed between the dimly granular basis of simply coagulated blastema and the perfect cellulo-fibrous or nucleated fibrous reticulated tissue. Ligamentous union of bone may exist in either of these conditions, or in any intermediate stage; and the success of any mode of cure will depend on its being adapted to the degree of organization. Where any amount of vascularity exists, successful union will be effected by removing the interruption to the further action of the vessels. It will suffice to place the limb perfectly at rest, and the blood-vessels will deposit osseous matter in the blastema which has been organized; even if the nucleated blastema forms the chief basis of the membrane, it becomes infiltrated, though slowly, with earthy matter, and a certain amount of local stimulation to the vessels will aid the process. If the connecting medium be very dense, and almost devoid of vessels or of organization, it will not be possible to convert it into bone, and the means of cure in that case will be such as will excite a fresh inflammatory action in the part. In such a case the dense cicatrical tissue is removed by the action of the excited vessels, just as it is in very dense strictures of the urethra, when we excite a new inflammatory action in the neighbourhood, either by caustics or by incision; the process is, in fact, ulcerative absorption. It is to such cases of false joint that the seton is applicable, and its occasional failure will probably be found to depend on its doing too much in cases where it is not applicable. The use of ivory pegs, resection, and other plans of treatment of similar violence, are

applicable to such cases. Fortunately, they are comparatively rare, and the simple adherence to perfect quiet is sufficient, in the great majority of cases, both to prevent the occurrence of this *contretemps*, and, if it does occur, to remedy it. I have found, as most surgeons probably have, that the simple starched bandage, strengthened, perhaps, with a little brown paper, will cure the greater number of ununited fractures. I have seen a dense ligamentous union of an oblique fracture of the tibia converted into bone, in six weeks, by this means alone.

The mode in which I apply the starched apparatus is nearly the same as that laid down by Baron Seutin. I have found it useful, however, to wet the bandages before rolling them; they lie more evenly, and with less strain at the edges, points of much importance where the slightest irregularity leads to œdema or vesication and pain.

Having protected all bony prominences with cotton-wool, or soft tow, the wet roller is applied with perfect evenness to the limb, from its extremity to beyond the joint above the seat of fracture. The outer surface of this bandage is now smeared with starch; narrow splints of porous pasteboard, softened in boiling water, and smeared with starch, are applied at each side; and, if necessary, behind and in front of the limb, extending upwards as far as the bandage; the edges of these splints are kept at least an inch apart from each other; another roller is applied outside the splints, and its outside well starched; if necessary, temporary wooden splints, or sand-bags, are used to keep the limb in position until the case is dry. As soon as this takes place (in twenty-four or forty-eight hours), it is slit up with scissors or knife, upon a director, between two of the pasteboard splints. This admits of the limb being daily inspected, if needful, when it can be rearranged by rolling a plain bandage outside, or by tapes attached to the case. If the case be too tight or too loose, it can be padded or pared accordingly. The evaporation which occurs during drying seems to keep down inflammation, as also does the even compression of the limb, and spasm is impossible. This casing is best applied as soon as possible after the injury. There is no question that perfect and immediate apposition of the fragments, with even support, prevents inflammation and excessive subcutaneous effusion; and if we wrap the limb well in cotton, and apply the bandages quite evenly, there is no danger of strangulating it. By leaving the nails uncovered, and pressing on them occasionally, we have a ready and unfailing evidence of the state of the circulation in the extremity. I have, however, never had occasion to relax the bandages before the case was dry, although

I have repeatedly put up fractures in this way in a couple of hours after the accident occurred. Still, if the circulation appears impeded, or if the patient complains of pain, it will be safer to relax the apparatus than to run any risk of sloughing or gangrene.

Of the applicability of this mode of treatment in compound fracture I have had too limited an experience to speak with certainty; there is, however, no difficulty or danger in applying it when the fracture is such as will probably become simple by the union of the wound in the soft parts; and in such a case it will aid in bringing about this result.

In fracture of the patella it is very useful, and it is only necessary to strengthen the *lateral* splints by a second layer of pasteboard. It is evident, of course, that the lateral splints prevent motion in the antero-posterior direction, and the anterior and posterior splints prevent lateral displacement. Inattention to this simple mechanical fact may lead to disappointment.

ART. XVIII.—*A Case of extensive Laceration and Contusion of the Thigh, with Exposure of the Femoral Artery, followed by mortification of a large portion of the injured soft parts, and rapid progress towards Recovery.* By CHARLES F. MOORE, M.D., Medical Officer of the Galbally Dispensary; Late Senior Surgeon in the Peninsular and Oriental Steam Packet Company's Service.

ON the 5th January of this year, Mary Maher, aged 28, was caught between the vertical and horizontal cog-wheels of a water-mill. Her weight, nearly thirteen stone, aided by the increased resistance which her clothes and powerful muscles opposed to the machinery's working, broke the brass axle of one of the wheels. The moment the mill was put out of gear, Maher was thrown with great force against some sacks of corn, a few yards from the wheels; all this was the work of a moment, of which she retains no consciousness. It would appear, however, that approaching too near the machinery, her clothes were first caught and torn, and then the glutæi muscles of the left side, by the teeth of the wheels, which continued to cut, bruise, and lacerate the muscles and other soft parts of the thigh, leaving a deep, irregular wound somewhat in the form of the letter *J*, extending from about four inches behind the anterior superior spinous process of the ilium, in a direction downwards, forwards, and inwards, laying bare the femoral artery for three inches of its course, the skin, areolar tissue,

fascia lata, and a part at least of the sartorius, being torn through, the laceration thus extending round some three-fifths of the circumference of the thigh, curved again about half-way to the knee, towards the outer aspect of the limb, ending an inch above the knee-joint.

The marks of the teeth of the wheels were visible on a considerable portion of the skin of the outer aspect of the thigh, which was severely bruised and subsequently mortified.

Besides the extent and depth of this lacerated wound, a mass of fat, areolar tissue, torn fascia, and muscular fibre, larger than a man's closed fist, hanging from the centre of the injured parts, increased the unpromising appearance of the case.

The poor woman, being alone on recovering from the stunning effects of the fall and injury, walked to the mill-door and some distance across a large yard, unassisted; and in all probability she owes her escape from total destruction to her very considerable weight having broken the axle of the wheel, as above stated; it is equally probable, too, that had her health not been the best, and her previous habits temperate, she could not have recovered from an injury of such extent, and involving, as it did, exposure of the femoral artery and extensive injury to nerves and other important parts.

I saw the case about an hour after the accident occurred; by that time the hemorrhage, which had been very slight in comparison to the extent of the injury, owing doubtless to the nature of the wound, had almost entirely ceased. Having despatched a messenger to the nearest gentleman's house (the accident having occurred in a remote part of the Glen of Aherlow), for some wine to support the patient who had fainted, and was in a very low state, and having applied warm blankets and bottles to her feet, &c., I examined the wound with as little disturbance of the injured parts as possible. The portion of the femoral artery which was exposed was where it gave off a large branch, that from its size and direction I considered to be the profunda. I could not detect any injury to either arteries or veins; having brought the opposed surfaces of the wound as well into apposition as I could, and replaced the protruded mass of soft parts before mentioned, I tied a linen cloth round the limb, and then commenced to unite the wound by the interrupted suture.

I had some difficulty in retaining the protruded parts in their proper place, and from the strain on the stitches and length of the wound, over twenty-two inches, I was obliged to use about fifty stitches. During their insertion, which in many instances gave great pain, the patient fainted three times.

I applied a bandage around the thigh to support the parts, and thereby diminish any strain on the stitches. The patient was moved from the mill where the accident happened, into Galbally, a distance of three miles; she was placed on a mat-trass, and this laid on a jaunting-car.

January 6th. Maher did not sleep last night; tongue covered with a white fur; pulse 120, hard and small; to have one grain of calomel and half a grain of opium twice a day; also, if she continues restless to-night, half a grain of opium and five grains of Dover's powder, at 10 P. M.

7th. Pulse 110, weak; was delirious last night, and did not sleep; at noon to-day she slept a little; to continue the port wine, one or two glasses a day; omit the opiates.

8th. Pulse 100, soft; fainted once or twice to-day; had a little boiled meat; to continue the wine; I applied long straps of adhesive plaster, as recommended by Dr. Scott: namely, from behind, and the ends drawn forward, so as to encircle the limb and overlap in front, thus supporting the injured parts, and relieving the strain on the stitches more effectually than the bandage which I had at first used.

9th. Bowels copiously affected; tongue whitish, with a brown fur in the centre, at the back part; she takes a little broiled mutton and port wine daily; to have aromatic spirit of ammonia and tincture of lavender, if at all faint.

10th. Pulse 100, soft; tongue cleaner than at last report; pus and serum discharged from the wound.

11th and 12th. Pulse 92; tongue improved; sleeps better.

13th. Pulse 100; the root of the tongue again coated with a brown fur, but moist; continues to sleep better than for the first three nights after the accident.

A serous discharge, which had freely flowed from the wound at the two extreme points, and from an incision I made into a fulness at a depending point on the posterior and outer aspect of the thigh, has now ceased, and healthy pus is secreted freely; the pus is mixed in some parts with blood; there is a very offensive odour from the wound.

I daily renew a great number of the straps of plaster, with as little disturbance of the injured parts as possible.

14th. Pulse 98; tongue coated with a yellowish fur; other symptoms exhibit no change.

15th. Pulse 106; at 1 P. M. much sero-purulent discharge; continue diet, &c., as before.

17th, 18th, and 19th. On each of these days I removed a large piece of dead skin, fat, areolar tissue, and some portions of the injured muscles, which all had become completely mor-

tified, and separated by ulcerative absorption. The whole might weigh from one to one and a half pounds, and be fourteen by five or six inches mean width.

On the removal of this gangrenous mass, the muscles of the thigh were exposed; their fibres and fasciculi, form, &c., being beautifully shown. I could not find a lesion of any of them, except of the *vastus externus*, in the hurried glance which I was obliged to content myself with at them, on account of the patient complaining of the effect of the then intense frost on the exposed surface, and as I had, for the same reason, only stripped a third of the wound on each of the days above stated. I, however, found the muscle at the outer and rather posterior part of the injury—which, as I above mentioned, I believe to have been the *vastus externus*—apparently torn through, and in a large round mass as large as a hen-egg. This has now, April 5, gradually diminished in size; and thus, has by the growth of granulations around it, become nearly uniform with the surrounding parts.

25th. Since last report Maher has steadily improved. Yesterday a small quantity of venous blood came away from the lower part of the wound; to-day, healthy pus is discharged, which has been the character of the secretion from the wound for several days; pulse 72; tongue clean, except slight whitish coating; she sleeps well; appetite good; about four ounces of port wine allowed to her daily, which she relishes much; the menstrual, urinary, and faecal secretions are regular and healthy.

At the commencement of the present severe frost, Maher complained of pain in the wound, which was relieved, however, by additional dressings, bandages, and bed-clothes, and a shorter exposure during the dressing of the wound; she likewise felt some oppression in her breathing, which yielded to the application of a warm plaster to the chest. The temperature of the leg and foot of the wounded limb, which was for some days apparently lower than that of the uninjured side, has been restored to the normal heat,—partly, possibly, by keeping the wounded limb on an inclined plane, the heel being the highest point, and by gentle friction along the larger veins with warm flannel. A tendency to bed-sores was overcome by the application of a spirit-lotion and slight changes of posture, with friction, &c.

26th. Maher complains to-day of pain in the venous trunks of the ham of the injured limb; frictions with spirits warmed, &c., were applied; the surface of the wound seems granulating in a most healthy manner; pulse 84; tongue covered with a slight whitish coating.

30th. The healing process has continued most favourably since last report; a perceptible margin of new integument having formed around the edges of the wound, whence the torn and contused mass separated by mortification.

The great vessels of the thigh are now completely protected by granulation (and adhesion?) of the muscles of the thigh; no pain in the limb; the patient sleeps well; bowels moved twice to-day by a draught of castor-oil, tincture of opium, and tincture of rhubarb, as they had not acted for four days previously; pulse 80; tongue as last report.

The patient relishes a piece of broiled meat daily, and a glass and a half or two glasses of port.

31st. Pulse 90; Maher had a disturbed night from the noise of an argument amongst the other inmates of the mill-house in which she lives; otherwise doing well.

February 2nd. Pulse 78; tongue clean; the surfaces of the vasti, adductores, and other muscles, whose several muscular fibres were distinct, after the mortification and removal of the injured areolar tissue, muscular fibres, fat, and integument, have now become smooth, except what I take to be part of the *vastus externus*, which has, however, become converted into a smooth round mass.

The dressing I have been applying to the granulating surface was lime-water and olive or linseed oil, applied on strips of lint. I have now commenced using strips of old linen, which seem to answer better. I find benefit arise from changing the oils, occasionally using the olive, and then again for a time the linseed, which plan seems somewhat to restrain the exuberance of the granulations. To continue the wine and meat.

13th. Pulse 84; tongue clean. Maher requires an occasional aperient. The whole surface of the wound is now granulating well. The same dressing as last ordered was continued.

16th. Maher continues progressing most favourably, notwithstanding the extreme severity of the weather, the thermometer having been more than 20° below the freezing point within the last three days.

It has been necessary occasionally, during several days, to resort to the treatment for prevention of bed-sores by change of posture above described.

The surface of the wound is healing rapidly; the discharge is healthy pus, with occasionally a little blood, which I find occurs on the patient remaining in the sitting posture for any length of time.

20th. Maher progresses favourably.

26th. Complains of weariness and pleurodynia; pulse 94; discharge is mixed blood and pus. The weather has changed from frost to thaw.

March 2nd. Maher has improved, and is now progressing very favourably; pulse 88.

4th. Pulse just after her dinner was 88; wound looking well.

8th. The wound is healing "beautifully;" granulations have completely filled in the spaces between the muscles, &c.; the irregularities of the *vastus externus* and *fascia lata* on the external and posterior aspect of the thigh have now become level through the healing process; "laudable pus" continues to be secreted in sufficient quantity, and the general health improves as the patient becomes more able to move her position in bed, sitting up for a good part of each day, &c.; until the last two or three weeks aperients were required once a week; now the bowels perform their functions naturally, and the whole system seems recovered from the very severe shock and drain upon its resources caused by the injury and earlier stages of the reparative process.

The pulse, however, still continues about 80.

11th. Wound rapidly healing; pulse 82; the discharge is quite healthy pus, and now diminishing as the wound lessens in extent.

Diet, bread and milk, and occasionally meat and potatoes.

At the first catamenial period subsequent to the injury, which was eight days after its occurrence, that discharge was natural. The next time it was scanty and white; this was the character of the secretion also at the third period, and on my last visit, the 7th April, I learned that no discharge had taken place at the expiration of the fourth period.

At times Maher still complains of slight stiffness and pain in the popliteal space.

14th. Pulse 90, the patient being in the sitting posture. She sat up for two hours yesterday, and had no subsequent bleeding from the wound as formerly.

17th. Pulse 80, after sitting up some time. Wound continues healing, except that the granulations are rather exuberant. Solution of sulphate of zinc, two grains to the ounce, to be applied to the wound.

20th. Maher doing well; pulse 86, while the patient was sitting up for an hour after breakfast. The solution of zinc seems useful in restraining the granulations.

23rd. Applied nitrate of silver to the larger granulations, but the pain caused was very intense.

25th. Maher progresses favourably. The nitrate of silver applied lightly to the granulations.

26th. The nitrate of silver caused great pain; the wound bleeds from some points; pulse 86.

In this case I impulsively followed what seemed the most natural course, namely, to restore the protruded parts and retain the opposite sides of the wound in apposition, to give them a chance of union by the first intention; I fully anticipated considerable suppuration from a wound so extensive and so much torn and contused, and the result, at least so far as this advanced stage warrants the expectation of a favourable result, shows the propriety of attempting union by the first intention, where one might not unreasonably fear vast loss of substance by sloughing of the injured parts: but again, I doubt not, very much of the deeper parts of the wound, as that about the femoral artery,—which was with a small part of the profunda plainly visible pulsating strongly, united by the first intention, and until the separating by the process of mortification of the very large torn and contused mass, &c., &c., formed the most natural protection to the more important tissues in immediate contact with the great vessels and nerves of the thigh.

ART. XIX.—“*Unsoundness of Mind*,” in its *Medical and Legal Considerations*. By JOSEPH W. WILLIAMS, L.R.C.S.I., Licentiate of the King and Queen’s College of Physicians, &c.

(Continued from p. 101.)

IMPULSIVE INSANITY.

IN the study of those insane states in which neither the moral nor intellectual faculty is, of necessity, inadequate to appreciate the relations of a particular act, whose commission is alone to be accounted for through the admission of an irresistible impulse, we are led to inquiries of even greater complexity than those which have previously occupied us. The investigation is one that demands on the part of the psychologist a mind free and unbiassed,—prepared to receive the mysterious realities of Nature as truths, and to reason on those realities. In no form of disease is it more essential that the physician be endued with that which, for want of a better term, we shall designate as

medical faith, or just confidence, the insensible growth of experience, resulting from observation, though inexplicable by theory, which serves to regulate the judgment under circumstances when the ordinary principles of our science seem to be shaken to their very foundation.

Like many other diseases, this particular affection may manifest itself through phenomena at once proclamatory of its true nature, or become so engrafted on pre-existing affections that its entity is lost in the lesion with which it is associated. To hope that, under such circumstances, truth will not be beset with many difficulties, is to assume a pre-established uniformity for the various actions to be adjudicated on, which assumption, however essential for, and verified in, the exact sciences, is, nevertheless, but little warranted when our considerations embrace the varying phenomena of life. We venture, therefore, on the apparently paradoxical assertion, that the greatest danger of modern medicine seems to rest in its mis-called Rationality, that is to say, in the growing tendency to require *demonstrative proof* of the *modus operandi* of physical changes, as well as of psychical actions, forgetful that the first are not unfrequently indicative of agencies beyond the reach of the knife; while the second, however intimately, or, as the highest authorities would lead us to believe, however invariably, they may be connected with special organic conditions, still present in their abnormal operations such strange diversity, as must ever render their diagnosis and treatment the peculiar province of the experienced physician. We believe that, by thus confessing the obscurity and difficulty of many psychical investigations, we in nowise detract from the value of that knowledge we do possess, but rather advance the scientific status of medicine in admitting its practice to be essentially dependent on the study of analogies; and further, by proclaiming that arguments cannot be forcible when the principles they would maintain are untrue, we place such theory as is derivable from the collateral sciences in its proper position, as an aid for the explanation of facts rather than the foundation on which they rest.

Differing altogether from either of those forms of disease we have hitherto been considering and yet involving many of the prominent features of each, the diagnosis of impulsive insanity may be stated to rest in the application of those principles which we have already set forth as regulating our opinions for their separate recognition. Thus, it will occur that, in a particular case, the proof of this affection, as indicated in the *act* to be investigated, accords to the operations of criminal

desire; while the mental habitude of the accused favours the opinion that from such it had originated. Again, it may happen that a mind, whose previous exercises afford no clue to the mystery, becomes amenable to this form of disease. In either of these instances the history of the case acquires separate value: in the one, involving the question in positive obscurity; in the other, investing its solution with a negative certainty. The fact, therefore, is, that in this particular manifestation of insanity, pending our inability to offer such explanations as may admit of proof, we take refuge in that asylum where vague doctrines, crude notions, and ingenious speculations find their resting-place, and with confidence appeal to the lessons of *EXPERIENCE*. Accordingly, in considering this as a peculiar affection, it is important that we define how it may be distinguished from those impulsive movements which result from monomaniacal conceptions, or those criminal acts which proceed from a morbid perversion, or seemingly indicate a profligate acquiescence of the moral principle. With this object we proceed to reiterate some few of our previous remarks.

In our investigations respecting monomania we have seen that criminal acts may be the result of delusive conceptions, and that, though the intelligence be adequate to recognise the civil and ethical relations of the act, yet, under the influence of the delusion, it may still find not only grounds for its justification, but be also fully competent to organize the means for its accomplishment: the diagnosis of such cases resting in the appreciation of the monomaniacal condition.

In our consideration of moral insanity we perceived that, consequent on the existence of that form of disease manifested chiefly through derangement or perversion of the affective faculties, a capital offence might be perpetrated, whose commission, according with previous manifestations, should tend to identify insanity with vice,—the diagnosis of such cases being full of difficulty, as demanding a close and careful analysis of those material and immaterial agencies directly or indirectly conducing to such an event.

The disease which we would now describe is one in which the act is impulsive, not uniformly complicated with mental delusion or moral perversion, except so far as may be manifest in its commission,—one that the previous history affords no direct guide to, and the subsequent conduct is also inadequate to explain; the morbid impulse neither of necessity originating nor terminating with the insane act. Dr. Forbes Winslow has afforded many examples of this form of disease, of which the

following may be regarded as types:—"In 1805 a man was tried at Norwich for wounding his wife and cutting his child's throat. He had been known to tie himself with ropes for a week to prevent his doing mischief to others and to himself." "A man arrived upon the Pont Neuf, he rushed violently to the parapet, and precipitated himself into the Seine. He was seen by some of the bystanders, who drew him out of the water and saved his life. After some days of complete restoration, his friends asked him the reason of his strange conduct. He replied:—'I cannot give any account; I am in the happiest situation in the world. I have only to play with fortune and with men. I have never been ill. I do not know what troubles may come upon me. I can only recollect my arrival at the Pont Neuf, and my recall to life,'"^a. Wherein rests the explanation of these cases? Ordinary principles fail to elucidate their essential nature. Are they not, therefore, the more instructive and valuable? Such illustrations of the secret workings of disease constitute so many landmarks in medicine. Admitting the truth that natural phenomena are alone explicable by natural processes, we are led to inquire how far our observation of many sensible operations enables us, in the absence of other data, to infer the nature of that process by which results of this character have been perfected.

It may be asked:—Do we not thus recognise, but also confirm, that absolutism in medicine to which our previous sentiments are opposed? We reply:—By no means: since, as physicians, in regarding every psychological question as one presenting both psychical and physical relations, we thereby recognise a diversity of agents as conducing to a similar result. It becomes, therefore, an object of the greatest practical importance to determine, if not the actual, at least the relative value of those several agencies, the climax of whose operations becomes manifest in insane impulsive acts.

In a state of health, the direction of the motor powers is intimately associated with the regulation of the emotional agencies. Our actions being, under such circumstances, free and uncontrolled, we possess not only the capability of *selecting*, but also of *adopting*, any particular line of conduct; the moving power and the power moved being equally amenable to the direction of the will. We have already described the will as "the ultimate decision which the moral and intellectual faculties conjointly determine." That the will does not wholly rest in the moral faculty is proved by the circumstance that

* *Anatomy of Suicide*, p. 73.

we frequently act in opposition to our strongest inclinations. That it is not a simple intellectual result is demonstrated by the emotions experienced in our actions. The very fact of a **WILL** denotes, on the one hand, a capability of perception as requisite to establish a choice; and, on the other, the existence of criteria for the guidance of our estimation, which presupposes our recognition of a moral scale. The will may be therefore regarded as the expression of the psychical and ethical reactions; identified with neither sphere, yet resting in their relations, and eventuating according as those relations may determine.

In the ordinary affairs of life, the will may be stated to rest in abeyance; for the moral and intellectual powers preserve such an equilibrium that our actions result without the necessity of its being aroused; the conduct being regulated by such a scale, as the imperceptible reaction of the moral and intellectual faculty has afforded. When, however, circumstances arise which specially implicate either the moral or intellectual faculties, the will, as being identified with the individual habit, may, by insensibly directing the attention to one class of circumstances, so far diminish the force or power of another; or, by practice, prove adequate to strengthen a peculiar associating principle to such a degree that it acquires a command over a particular class of ideas; but beyond this we cannot recognise its influence. To speak of the *will* as being instrumental in guiding the conduct, when the mental operations are defective, is to ascribe a capability to an effect which we would thereby deny to a cause: a process of reasoning altogether fallacious; for, except as the exponent of the *animus*, we believe that the will has no real existence. They, then, who would speak of an *insane* individual having his acts within the control of his will, and being therefore responsible, must regard the will as some extraneous production; a kind of *tertium quid*; factor as well as product; the responsible offspring, as well as agent, of the irresponsible mind. There are those who, entertaining such views, would argue a partial responsibility for the insane. This doctrine we shall have occasion to energetically condemn, as being, according to our belief, not only false in theory but also in practice; calculated to prevent any approximation to soundness in medical opinion, as affording psychological problems for solution, in which both the elements of discussion—the criminal act and the unsoundness of mind—are thereby constituted indeterminate items, from which it is in vain to seek a determinate result.

There is little doubt but men are often led by vicious habits,

or the force of passion, to act in such a manner as, it may be said, renders them the "creatures of impulse,"—which we may interpret, slaves of an irregular mind,—when, for the time being, they are, as it were, in a somewhat similar position to those driven to action by an insane stimulus. We must, however, guard against confounding analogies with facts; nor for one moment identify that unsoundness of mind—or, to speak in terms less likely to be mistaken, that depravity of mind which results from *vice*—with that unsoundness of mind which we recognise as constituting *insanity*: for though but slender barriers may separate the two, yet as in the former the want of mental control has been voluntarily induced, and is, in truth, but a submission to the evil promptings which beset humanity—whose discipline and guidance it is the object of religion to accomplish and of the laws to enforce; while in the latter, it is disease and not vice which triumphs; it becomes a self-evident proposition, that for the practical purposes of life all ethical or logical similitude between the two is lost the moment we pass beyond the particular act.

There is no doubt that for the regulation of our conduct through life the mind carries on many intellectual processes, which, though leaving no direct traces in the memory, are not without exerting a material influence on the disposition, with which the will seems to be identified as the instinctive expression of such unconscious operations. These mental processes continue until some event occurs which interrupts the routine of their passive action, when it may then become a question as to whether the admitted obligations of acknowledged truth, or the natural dictates of depraved humanity, gain the ascendancy.

In the same mind, the consciousness of that which is right is not always adequate to insure its adoption, unless the mind be strengthened by motives which it places in successful opposition to the natural desires. In this inability rests the weakness of humanity: a fact involving a psychological problem which sacred and profane writers alike attest. "The good that I would, I do not; the evil that I would not, that I do," St. Paul exclaims when lamenting the weakness of his humanity. Cicero arrived at the conclusion of a perpetual internal conflict between right and wrong, from philosophy alone. Ovid observes:—

"*Sed trahit invitam nova vis; aliudque cupido
Mens aliud suadet—video meliora, proboque,
Deteriora sequor.*"

Araspas declares:—"I plainly perceive that I have two souls; for if I had but one, it could not be at the same time both good and bad; it could not at once act both virtuously and viciously, or will at the same time to pursue and avoid the same conduct. But, having two souls, when the good one prevails I act virtuously, and when the bad one prevails I disgrace myself with vice." Were we in the healthy individual to recognise such mental conditions as sufficient exculpation for illegal acts on the grounds of their being involuntary, we should thereby afford full range to licentiousness, and remove the necessity for that mental and moral cultivation which is the only effectual security against grossness or crime. To say that vice is involuntary because the dictates of conscience oppose its commission, while the depraved appetite triumphs in its accomplishment, or, to presume that responsibility is lessened because men are conscious of the wrong they commit, and lament their inability for resistance, is simply to afford full scope to the worst passions of our nature. That free agency is permitted to man, and the capability of acting with a perfect sense of responsibility identified with the healthy condition of his mind and body, all must believe who would expect happiness here, or hope for a future hereafter. When, then, we speak of crimes being the result of an insane impulse, we declare the individual perpetrating them to be an automatic instrument in which the will has been replaced by a morbid stimulus, the guidance of the mind being wanting for other appreciation of the act than such as is necessary for its perfection. To this question we shall again recur.

If these opinions be correct, we seek to explain the cause of the impotence of volition characteristic of the disease we are considering, by an analysis of the several agencies which observation points out as adequate for the production of phenomena similar to those observable in insane impulsive acts. In following out such an investigation, we become the more truly convinced of the close and intimate reactions existing between the physical instrument and the psychical principle, as well as of the necessity of regarding the mind as a unit, which, though capable of manifesting partial disease, is nevertheless, as a *whole*, under such circumstances, unsound.

That this very marked association which we have stated, exists between the emotional feelings and the motor powers, maintaining them in perpetual reaction, is abundantly proved by the fact, that in extreme states of mental excitement, when the emotional feelings are those principally implicated, analogous physical manifestations, as convulsions, &c., not unfrequently

ensue; while in other constitutions, in which the psycho-physical sympathies are less acute, the emotional feelings, though not proceeding to the same extent, still find in violent physical exertions their greatest relief. In illustration of this, we might adduce many familiar examples. When the mind is adequate to regulate these emotional feelings, it may determine their external manifestations, and in order that it do so, it is requisite that the agency of the will be exercised for their physical exposition. When, however, the mind is not adequate to such an end, a simultaneous accordance and development of psychical and physical phenomena ensue. The emotive faculties direct the motor power according as they are themselves attracted, and so impulsive actions result, in which the will has no part. The direction of the motor powers being dependent, in a great measure, on the regulation of the emotional agencies, demands that their harmonious co-adaption be preserved—that is to say, that the existence of pathological and metaphysical freedom be determined in those cases where the question of responsibility for impulsive acts comes to be investigated, when, should it appear that the healthy operation of either sphere is interrupted, the physician may, from his scrutiny, be enabled to estimate the influence such interruption is adequate to exercise on the conduct of the individual under examination.

The examples of this disease which we have quoted, present two distinct forms.

1st. Those cases in which the impulse exists, and the motor powers are *in initio* under control.

2nd. Those in which, simultaneous with the impulse, is the accordance of the motor power.

While confessing our inability to offer any determinate pathological explanations for the elucidation of cases of this nature, we believe we are not without sufficient grounds to infer, that those sudden and apparently unaccountable outbreaks of insanity must be regarded as either the effects of mental reaction, in which an effort is made to relieve the mind of an accumulative morbid tendency, the consequence of chronic, deep-seated, nervous disease; or that their occurrence is, but the first indication of such cerebral changes as are the prelude to incurable and not unfrequently fatal results. Dr. Forbes Winslow, many years ago, observed in reference to this point, when speaking of impulsive homicides, "If such cases were attentively examined, I believe that in every instance the murderous impulse would be found to have been preceded by a derangement of the bodily and mental health, which has escaped observation." The truth of this statement is each day

established, since special insane impulsive acts will be generally found to derive their proximate origin from any cause capable of interrupting the seemingly healthy operation of what is subsequently admitted to be a diseased mind, or adequate to particularly attract the depraved attention; which causes may rest either in a severe mental shock or some incidental occurrence, apparently unconnected with the morbid phenomena they so materially contribute, not to originate, but to develop, a feature in this particular form of disease that must be considered as characteristic.

Impulsive insanity, which might perhaps with some truth be regarded as a psychical convulsion, has been found to present a close similitude to other affections of the nervous system, in which the physical structures are more immediately implicated. Its uncertain and variable nature,—its recurrent character,—its tendency to arise from that which we may term psychical sympathy, or imitative propensity, so fruitful a source of neurotic affections amongst those so predisposed,—afford strong presumption of its nervous dependency. Its general physical predisposing causes are identical with those known to operate injuriously for the production of all mental disease. The special physical predisposing causes include hereditary transmission as the chief and most important; the receipt of injuries, particularly of those affecting the cerebral structure; irritations at the great nervous centres; and conditions of the system conduced more immediately to congestion of the vessels of the brain. Of the importance to be attached to the first of these physical causes, all writings satisfy us; our appreciation of the second must be guided by the nature and extent of the injuries, rather than by the period which has elapsed since their receipt. The third entails an analysis of the psycho-physical sympathies; while the practical value of the last or cerebral congestion, as an element in the formation of our diagnosis, though unquestionably of the first importance, is not unfrequently lost, since we are, from observation generally, deprived of the means of forming an accurate opinion of the state of the circulation *previous* to the commission of the particular offence; and though we see the patient immediately after, we cannot exclude the influence of that excitement attendant on, or consequent to, its perpetration. The knowledge that those who have manifested a tendency to impulsive acts suffer at the period of the fit from cerebral congestion, while offering a valuable suggestion for the treatment of those known to be so affected, at the same time affords a pathological association, which, when considered in combi-

nation with other elements for the guidance of our opinion, becomes one of the first significance. Damien, who attempted to assassinate Louis XV., persisted to the last in saying, that had he been bled that morning, as he had wished, he would never have made the attempt:—an assertion which finds its corroboration in the fact, that many most determined suicides have, as soon as the depletion from their self-inflicted wounds reduced their circulation, not only manifested the greatest aversion for life, but on their recovery been perfectly cured of that morbid tendency which had rendered their tenure of existence alike miserable and uncertain.

Failing, however, in this, as in other forms of mental disease, to establish any fixed pathological relations, yet acknowledging the importance of all physical associations, we are led to the closer investigation of those other circumstances which, in the estimate of any particular impulsive act, should influence our opinion. These considerations may be conveniently ranged under two heads:—

1. Those having relation to the individual accused
2. Those relating to the specific character of the criminal act.

Under the first head, all that refers to the personality must receive the closest psychological scrutiny, when, in addition to those special points mentioned as demanding investigation, *every* physical derangement becomes an important element in diagnosis, whose value is proportionate to the influence experience affirms it may be capable of exercising. But some one exclaims, ‘So many individual differences exist, both in the physical and mental constitution, that the result of their reactions varies in each particular case.’ We have already premised this, and declared that it is only by bearing in mind what those laws are which operate in the production of phenomena, and by weighing the possible modifications they are adequate to mutually exercise, anything like accuracy in opinion can be approximated.

It becomes then our duty to investigate the different circumstances which influence their relations, when, by reflecting on what those agencies are which have proved adequate to the production of similar phenomena, we are, from either their presence or absence, furnished in any particular case with a certain amount of positive or negative information. It will be at once admitted, that causes capable of producing extreme results in one constitution are apparently harmless in their operations on another. Gastro-intestinal irritation will, for instance, in one individual give rise to the severest form of convulsion,

and a terrible train of anomalous symptoms ensue; while, in another, its presence is only marked by the local inconvenience thereby occasioned. Now, though the *conjunction* of events must be considered as apart from their *connexion*, yet when, as in this case, they stand apparently in the light of cause and effect, we become impressed with the necessity of inquiring into the reason of such a difference between individuals exposed to the same influences, and are led to an estimate of those physical sympathies which are in some adequate to place the whole system at the mercy of a single point of irritation. We find that in such the local excitement prevails, because the constitution is adapted for the same; and that the constitution appears to be adapted, because the local excitement has prevailed; those causes, thus acting and being acted upon, move as it were in a circle, the centre round which they revolve being the source from which the irritation present had primarily originated; the secret predisposition resting in some physical specialty, either congenital or superinduced. This individual aptitude for, and uncertainty in, the eventuation of disease, is also illustrated in mental affections. We are in the latter equally without a rule by which we could connect psychical and physical operations, or associate general psychical conditions as the necessary accompaniment of any abstract psychical phenomena. If we look further for analogies, which would lead us to infer so close a similitude as to almost argue a connexion between this form of insanity and lesions of the nervous system, we have them amply supplied in the fact that psychical sympathy or imitative propensity is one of the most fruitful sources to which insane impulsive acts are to be attributed.

In his paper, read before the Académie de Médecine, 2nd May, 1848, M. Belhème offers many valuable remarks, in reference to the particular effect of political emotions as productive of partial mental derangements. As we review the events which revolutionized the Continent, and extended their influence to our very hearths, we are led to believe that many of those changes resulted from the widely extended operation of psychical sympathy; that as, in physical expositions of nervous derangements, imitative propensity originates similar affections in many in whom the predisposition exists: so, in an analogous manner, the psychical operations follow a similar course,—when a morbid sympathy permeates the masses, amongst whom many are to be found keenly susceptible of its particular influence. We believe the year 1848 to have been, for the psychologist, an era of surpassing interest. Of the events which then occurred we may observe, as Hecker did when speaking of the epidemics

of the middle ages: "They are a portion of history, and will never return in the form in which they are there recorded; but they expose a vulnerable part of man,—the instinct of imitation." Trace what we may term the political epidemic of that year:—The spirit of reform awakens at Rome; Naples re-echoes its notes with a Sicilian revolution; Paris responds to the cry, as Socialism and red Republicanism join hand together; Prussia, following in the train, succumbs to an armed mob; Austria sees its Emperor seek refuge in the Tyrol; Germany, in a series of *emeutes*, sacrifices its means of independence; England, with her time-honoured institutions, is with Chartist agitators painfully conscious of a shock; while Ireland, with a constitution enfeebled by suffering, and nervous energies exhausted by long disease, owing to the prophylactic measures which her physicians, anticipating the epidemic, employed, happily passed through the ordeal without sustaining injury to a serious degree. Surely those revolutions, then consummated, resulted rather from an epidemic aptitude for change, than the triumph of the rude powers by which they were accomplished! It would not, to narrow our sphere of inquiry, be difficult to enumerate many examples where the ordinary phenomena of existing disease have been strangely modified in obedience to this involuntary operation of sympathy; as also where, without other assignable cause, certain affections have been developed in individuals, who, though possessing a constitutional aptitude, had not, until this latent sympathy was aroused, displayed any particular morbid manifestations; and who, were it not for the kindling of the latent spark, might have gone through life without being conscious themselves, or manifesting to the world the existence, much less danger, of that mine of insanity thereby sprung. Physical sympathies we know to be proportionate to nervous communication, or nervous supply, and to be, moreover, to a great degree, dependent on the general tone of the physical constitution. With this psychical sympathy or imitative propensity preserves an analogy, since observation establishes that it is most liable to be aroused in those whose physical structure be-speaks high-wrought sensitiveness, and whose psychical receptivity appears equally open to impressions from without. Man, in a state of health, has been aptly described as an imitative animal. In diseases of the nervous structures, more particularly, this natural disposition becomes morbidly increased, and many deeds which his unclouded judgment would reject *become acts of necessity*, against which all his struggles are in vain. This insane adoption of particular habits must be distinguished from

that which in the healthy mind results from continued association; the one proceeding from the morbid and determinate assimilation of conduct,—the other denoting the insensible accordance of sentiment; the one implying the assumption of a particular habit irrespective of principles,—the other, the adoption of such habits from the accustomed acquiescence with their principles. We have, then, in the recognition of this physical and psychical operation, a further element in the formation of our diagnosis which, it will appear, is equally valuable both in its application to the individual, as well as to the act under investigation:—to the individual, as entailing the analysis of his nervous constitution; to the special character of the act, as leading the physician to estimate the relation it may bear to any circumstances, however remote, which experience assures us is possible, through those sympathetic laws, for its development, if not its generation.

That extraordinary states of mental excitement may be, to a remarkable degree, dependent on some single nervous derangement adequate to present illusions to the predisposed mind, is particularly illustrated in hypochondriacal disease. In proof that the influence of local causes seems to be, in many cases, mainly instrumental in the production of psychical phenomena, we quote Esquirol's observation:—“Reil relates that an insane lady having fits of excitement, and even of frenzy, her maid, wishing one day to quiet her, put her hands over her eyes, when the patient immediately recovered herself, was perfectly calm, and declared that she no longer saw anything. The medical attendant, informed of this phenomenon, tried the experiment himself, and was convinced that her agitation was produced by the disorder of her eyes, which represented terrific objects to her”^a.

We might here enter on the investigation of the connexion which has in many cases been observed to exist between local diseases and mental derangement, and at greater length, impress the necessity of carefully estimating the physical constitution, by adducing facts to establish that apparently trifling lesions have proved sufficient to destroy the balance of power which, in many minds, is suspended by the feeblest threads. Yet as the least experienced of our readers will, we doubt not, call to recollection ample facts to satisfy them on these points, we, therefore, pass to those more particular, but not less practical considerations, which relate to the special character of the criminal acts.

^a Esquirol, *Observations on the Illusions of the Insane*, p. 22.

1. As regards those cases in which the impulse exists, and the motor powers are *in initio* under control.

Medical writings abound with illustrations of this form of disease, of which M. Marc has in particular afforded many well-marked examples. The cases he has adduced have already been quoted by so many authorities, more particularly that which occurred in the family of M. le Baron Humboldt, that it is scarcely requisite we do more than now refer to them. A female servant, while daily undressing a little child, was at such times, from the whiteness of its skin, seized with the desire to tear it to pieces. Restraining her impulses, she threw herself at the feet of her mistress, against whom she had no complaint, and entreated that she might be sent out of the house. We adduce another instance from the same author. A young lady in an asylum, rational on every subject, experienced a violent inclination to commit homicide, for which she could not assign any motive. Whenever she felt the approach of the fit, she entreated to have the strait waistcoat put on^a. Dr. Zimmerman relates the case of a peasant, born at Krumback, who was often seized with an irresistible impulse to commit murder. He felt the attack coming on for hours; sometimes for a whole day. As soon as this presentiment of its approach was experienced, he begged to be secured and chained, that he might not commit some dreadful crime. "When the fit comes on," he says, "I feel under the necessity to kill, even were it a child." He declared that his parent, whom he loved tenderly, would be the first victim to this murderous propensity. "My mother," he cried out with a frightful voice, "save yourself, or I must kill you." Before the fit, he complains of being exceedingly sleepy, without being able to sleep. He feels depressed, and experiences slight twitchings in the limbs; he preserved his consciousness during the fit, and was conscious that in committing murder he would be guilty of a most atrocious crime. When he is disabled from doing injury, he makes the most frightful contortions and grimaces, singing or talking in rhyme. The fits last from one to two days; when they are over, he cries out, "Now unbind me. Alas! I have suffered cruelly, but I rejoice that I have killed nobody"^b.

Another example may be briefly quoted. A gentleman called by himself at a lunatic asylum, and begged for admission, at the same time presenting a note from his solicitor, whom he had just left. This note confirmed his own account that he re-

^a Prichard's Treatise on Insanity, p. 385.

^b For further particulars see Plea of Insanity in Criminal Cases. Dr. Winslow, p. 45.

quired restraint, for, as he stated, "he had an irresistible desire to murder his wife or one of his children." He continued: "That the preceding day he was walking in his garden, when he saw his wife and little girl approaching towards him. His eye at the same moment caught the sight of a hatchet lying on the gravel walk, and he described that he had the greatest struggle within himself to escape out of the garden before he seized it, to strike, perhaps fatally, one or other of them." He loved his wife and child, he affirmed, dearly, but the homicidal idea haunted him continually, and he felt that he could not trust himself alone in their presence. It should be added, that the last night he slept at home he did attempt, in the middle of the night, to strangle his wife, and would have succeeded, had not her cries in the struggle brought in timely assistance. In the midst of all this, during the explanation he gave of his case, he expressed himself well and rationally. His intellect appeared to be unclouded, and it turned out that he was at the same time in communication with his solicitor respecting some proceedings in the Court of Chancery, upon which he gave perfectly sane instructions^a.

We might, without difficulty, extend our list of cases. We believe, however, that sufficient has been adduced to establish the nature of this particular form of the impulsive disease, the proximate cause of which appears to depend on any circumstance adequate to specially attract the predisposed mind, more particularly if such cause is of a nature capable of associating with the depraved intelligence the motive powers. Thus in one case we have the proximate cause resting in the object of homicidal intent; while in the other, the predisposition had no fixed attraction. Again, we have the predisposition directed towards objects by which the general thoughts are chiefly occupied, its active exercise being dependent on incidental occurrences, and in the last-mentioned case the morbid predisposition was at once roused into action by the sight of a weapon capable of forming a link between the insane impulse and motor powers. In all these cases a consciousness of wrong in the act, and an incapacity for its avoidance, were fully experienced. To these facts we shall recur when we have considered

THE SECOND FORM of the disease, or that in which simultaneous with the impulse is the accordance of the motor power.

William Brown was executed at Maidstone, England, in 1812, for strangling a child whom he accidentally met one morning, while walking in the country. On the trial, he said he had

^a More full details will be found in the *Psychological Journal*, vol. v. p. 421.

never seen the child before, had no malice against it, and could assign no motive for the dreadful act. He took up the body and laid it down on some steps, and then went and told what he had done, requesting to be taken into custody. He bore an exemplary character, and had never been suspected of being insane^a. A young man, in perfect health, awoke suddenly one night in a fit of raving madness, ill-treated his wife, attempted to leap out of the window, and struck at whatever came in his way. An emetic put an end to this scene in an hour, since which he has been in a perfect state of health, never having had a recurrence of the attack^b. It is related of Mathews, the comedian, that having for some days led a vapid and inactive life, he joined a party of pleasure. "He had not ridden out of the city for some weeks, and was in a state of childish delight and excitement. At this moment his eyes turned upon one of the party, a very little man, who was perched on a very tall horse, and who seemed unusually grave and important. Mr. Mathews looked at him for a moment, and the next, knocked him off with a smart blow, felling him to the ground. The whole party were struck with horror, but no one felt more shocked than he who had committed the outrage. He dismounted, picked up the little victim of his unaccountable freak, declared himself unable to give any motive for the action, but that it was an impulse he could not resist; and afterwards, in relating the extraordinary incident, he declared that it was done in a moment of frenzy, induced by the too sudden reaction from previous stagnation of all freedom and amusement"^c. Many examples of this nature might be adduced confirmatory of Esquirol's opinion, "that there exists a species of homicidal madness in which no disorder of the intellect can be discovered." In the cases last mentioned, the previous history is only of negative value; the character of the acts alone affording grounds for our opinion. Were this disease to remain thus simple and uncomplicated, we will grant that its diagnosis would present sufficient negative grounds to invest it with an almost positive certainty. The known character of the accused—the abstract atrocity of the act—the circumstances preceding its commission, and following on its consummation, rendering its investigation a matter in which a careful estimate of natural laws is that chiefly required. Inasmuch, however, as actions closely identical with these impulsive movements may arise as the result of morbid conditions of the mind,

^a Ray, *Medical Jurist*, p. 184. ^b Feuchtersleben, *Medical Psychology*, p. 299.
^c *Anatomy of Suicide*, by Forbes Winslow, p. 74.

which accord to the character of the act, its diagnosis is not unfrequently involved in considerable difficulty.

In our considerations respecting moral insanity we found that, in the form of disease manifest by a general derangement of the moral principle, there was a remarkable and close analogy between its operations and those of vice. The details of many cases prove that homicidal acts have resulted from such mental conditions, in which the singular accordance of the phenomena was well calculated to confound those, who would attempt to form a judgment without instituting a most careful analysis. In an example related by Pinel, the habitual indulgence of evil passions was accompanied by a disregard of animal life, and such an uncontrollable career of vice as led to the commission of murder. Dr. Prichard has enumerated many cases in which homicidal and moral insanity were intimately associated. Thus: Antoine Leger, whose previous history established insanity, "seeing one day a little girl near the margin of the wood, he seized her, murdered her, sucked her blood, and afterwards buried her body. He was, we regret, for the sake of medical science, to say, sentenced to death. M. Esquirol and Gall examined his head. The former discovered morbid adhesions of the pia mater to the brain. M. Gorget, after examining the facts, justly concluded an asylum, rather than a gibbet, should have been the sick man's award"^a. To this we may add the case of Feldtmann, "who, after attempting to gratify an incestuous passion for his own daughter, who had invoked the aid of the police to resist his attacks, stabbed her to the heart, wounded his wife and another daughter, and then gave himself up to a crowd who surrounded him, exclaiming, in reply to their reproaches, 'C'est bien fait.' This unhappy being was also executed. The existence of insanity was not fully established by facts; but it seemed evident that the miserable wretch, who suffered for his offence, had scarcely intellect enough to comprehend its nature, and to perceive the turpitude of his conduct, though he foresaw the destiny which awaited him. M. Breschet considered his brain to be in a condition different from that of health; and M. Gorget's opinion was: "that Feldtmann was a man whose weak intellect was overwhelmed by a passion constituting in itself a real disease, which ought to have been cured by separating the unfortunate wretch from society without resorting to the barbarous expedient of extinguishing it together with his life"^b. In the case of Anthony Emmanuel Joberd we find, superadded to perver-

^a Prichard. p. 394.

^b Prichard, p. 394.

sion of the moral feelings, the homicidal mania, accompanied, in one instance, by the capability of control consequent on the contending force of passion, and the impulse yielded to in the second, where a perfect stranger, altogether indifferent to the accused, was the victim^a.

We have deemed it the more advisable course to refer to well-known instances of this disease rather than to adduce examples whose details, though less familiar, would still present no better illustration of the phenomena we seek to elucidate.

Cases of this nature constitute not unfrequently occasion when the physician is called upon to affirm the godlike function of the healing art, which, tempering justice with mercy, declares that the operations of disease, whether they render the body a disfigured mass of loathsome matter, or pervert the mind till it become a depraved instrument for revolting conceptions, are still fitting objects for commiseration and care, rather than abhorrence or vengeance.

We have already affirmed that simple and uncomplicated examples of disease offer to the experienced physician but little difficulty in their recognition; the truth, however, is, that uncomplicated lesions are the exceptional cases. It is in the estimate of morbid combinations that the medical mind becomes manifest. Thus, homicidal insanity, or impulsive mania, associated with the desire to destroy life, may arise pending another and distinct form of disease, of which it is not impossible it therefore forms the most prominent feature. The one affection becomes engrafted on the other, and the same mistake occurs as is common in physical disease—the symptoms which appertain to one are considered as characteristic of the other, and their differential diagnosis is thus lost sight of. It is not difficult, with the foreknowledge that an individual has suffered from unsoundness of mind, to estimate at its true value the homicidal act. It may be also an easy matter to recognise the process by which an admitted monomaniac has become a homicide; but cases will occur in which, for such a purpose, every conceivable obstacle exists; in which the homicidal act has seemingly no connexion with the delusion, as in the case of the youth and the windmills; or again, where the monomaniacal condition is so concealed that the homicidal act, long contemplated and deliberately executed, is in itself the first prominent indication of the mental unsoundness. Thus, a man of the name of Frost was tried for killing four children at Norwich; his idea was, that he thereby obtained for them an

^a For full details see *Psychological Journal*, No. 20.

early translation into heaven, and sent them all there^a. Instances of this nature differ materially from the true form of the disease we are describing; for in such, strong motives for the deed, however insane, exist in the mind of the patient, against which they may have long struggled secretly, until at length, from the delusive nature of the morbid conception, they are led to regard the commission of the act, which they had previously abhorred, as the highest evidence of their moral excellence. In such examples impulse, it is true, exists; it is, however, a phenomenon engendered by, not originating with, a mental condition. We have alluded to the influence which psychical sympathy is capable of exercising on the masses: and that this form of insanity seems therein, in particular, to present a remarkable analogy to other diseases involving the nervous system. On this point Dr. Forbes Winslow thus writes:— “The commission of a great and extraordinary crime produces not unfrequently the mania of imitation in the district in which it has happened. A criminal was executed at Paris not many years ago for murder. A few weeks after, another murder was perpetrated; and when the young man was asked to assign a reason for taking away the life of a fellow-creature, he replied that he was not instigated by any feeling of malice, but after having witnessed the execution, he felt a desire, over which he had no control, to commit a similar crime, and he had no rest until he had satisfied his feelings.” Gall has recorded the instance of a man who, on reading in the newspapers the particulars of a case of murder, perpetrated under circumstances of peculiar atrocity, was instantly seized with a desire to murder his servant, and would have done so had he not given his intended victim timely warning to escape.

In those individuals in whom a latent predisposition to this disease exists, extraordinary mental emotions are known to be capable of acting as the proximate cause of its development. Pinel relates a case of impulsive insanity consequent on the excitement of seeing armed men. Similar examples might be quoted, as also other instances, in which, when so excited, the mere sight of a fitting weapon has been sufficient to determine the execution of the extreme act. It would be a matter of mere industry to extend the number of cases; we forbear to do so, believing that if those we have advanced prove insufficient, others would not render us more certain.

In the investigation of cases of this nature, the physician requires to stand fast by the principles of philosophic medicine,

^a Psychological Journal, vol. i. p. 485.

that he be enabled, as far as human means avail, to aid justice by, on the one hand, protecting the victim of popular hatred, or on the other, exposing the pretender who should seek to screen his infamy under the mask of infirmity. Who, on reading of the execution of many of those wretched insane, but feels thankful that we now live in an age when science, dissipating the gloom of ignorance and superstition, has divested psychology of other difficulties than those which are inseparable from all sickness, as being involved in the great mystery of our being?

Here it is that the psychologist requires to concentrate the several elements which contribute towards his diagnosis. All that relates to the personality of the accused; the estimate of his mental constitution, both in its moral and intellectual operation; the character of the act in its twofold relations to his intelligence,—constitute the three sources in which the grounds of his opinion rest. We impress the necessity of carefully estimating the psychical as well as ethical relations of the act. We have stated that while the law recognises the act, it is still determined by the motives which may have induced its commission. Such being the case, the presence or absence of presumed motives to the crime becomes of the greatest importance—the existence of these motives being determined by the evidence, their psychical value resting with the physician. We impress this latter point, for were the truths of medical science to be regarded as being dependent on the imperfect machinery of the law, we should have the appreciation of each act varying not only according to the number of motives wanting or adduced, but also proportionately to the significance of those motives in the mind of the separate members of the jury. It is well that the sources of error, as regards motives, be fully understood. In one instance the presumed absence of motives may proceed from our inability to detect them; while in another, the only motives adduced are of a character altogether disproportionate to the magnitude of the crime. Thus, in the year 1826, a young girl was condemned for life to the public works for having in cold blood cut off the head of a child belonging to one of her neighbours. In the absence, says the “*Gazette des Tribunaux*,” of all known interest in the commission of the crime, the medical men declared that the mental condition of the accused presented unequivocal symptoms of mental alienation. The real facts were, revenge for the father of the child having deceived her in love^a. In July, 1837, a man of the name of Greensmith was

^a *Psychological Journal*, vol. i. p. 332.

tried for the murder of four of his young children. He was proved to have been of industrious habits; he got into distress, and destroyed his children to prevent them being turned into the street; there were no other motives. He was found guilty, and was subsequently declared to be insane^a. Here, in one instance, we have motives concealed; in the other, motives insufficient.

How many men may, with the greatest deliberation, commit crime, but, owing to circumstances, their victim be mistaken, and a homicide be perpetrated where no motives having reference to the individual suffering can be detected. Again, the existence of a motive, however reasonable that motive may appear, is no proof of the sanity of the accused, since they may have as their origin data which, however apparently reasonable, are still the offspring of a perverted intelligence. Thus, in the case of Feldtmann, to which we have alluded, the homicidal act proceeded from an inability to gratify a criminal passion, which passion we believe to have been the result of disease. Again, how many motives according to the evil dictates of our nature, such as jealousy, hatred, or revenge, known to be cherished against a certain individual, may, in the event of his death, be adduced in proof of pre-arrangement as well as of premeditation, and those feelings have their origin in true data operating on a monomaniacal mind, as we had illustrated in the case of Ovenson.

It follows from these considerations that, though the apparently wanton atrocity of an act cannot be rejected in our estimate of its source, yet it is in itself no proof that its perpetrator was insane. The suddenness of an act is no argument against its matured premeditation; nor can the presence or absence of motives be regarded as of other value than such as they derive from their association with the mind of the accused, rather than the circumstances under which the criminal act was accomplished.

We believe that there are conditions of the system in which morbid impulses exist, inexplicable by any of the ordinarily recognised psycho-physical conditions. We have known individuals to all appearances enjoying physical and mental health, of whose many amiable and excellent qualities no doubt could be entertained, who have, notwithstanding their apparently healthy state, acted in such a manner as not only outraged those laws necessary for the welfare and preservation of society, but, with the full consciousness of the impropriety of their con-

^a *British and Foreign Quarterly Review*, vol. x. p. 144.

duct, committed some act, so diametrically opposed to the previous current of their lives,—so perfectly at variance with every probable motive or conceivable advantage,—so trivial in its inducement, and yet so lamentable in its results,—that common sense rejects the idea of rationality in its consummation. That under such circumstances criminal acts are perpetrated, when the free agency of the individual is for the purpose of their commission suspended, we most truly believe. We admit the accused, as far as the possession of intellectual powers go, to evidence the ordinary exercises of a cultivated mind, and, as far as the moral faculties are concerned, to be perfectly alive to the best and tenderest duties which strengthen the ties of social life; and yet, occasion offering, a sudden yielding of the justly balanced mind occurs, whereby the object of our kindest sympathies becomes placed in a position strangely analogous to, yet widely—very widely, differing from, the operations of vice. The solution of this psychological problem may be presumed to rest in an investigation of the laws of psycho-physical sympathy; more particularly as the examples illustrative of the phenomena to which we refer, are to be met with in females, usually of susceptible nervous systems and sensitively constituted minds. That there are times in which the female sympathies are keenly alive to external impressions, and the mind in a condition of morbid receptivity, those intimate with feminine diseases must be fully conscious of,—a condition presenting a strange compound of physical and mental hysteria,—this condition manifesting itself at that period of life when nature, undetermined respecting the perfection of her processes, disarranges the harmony essential for self-control, without at the same time manifesting any special indication referable in a sufficiently marked manner to either the physical or mental constitution. We know that, at such periods, strange physical sensations are experienced, and that morbid desires flit across the mind, without sensibly interfering with its just and proper exercises. Pending this recurrent psycho-pathical condition, the psychical and physical sympathies become so completely interwoven, that they immediately respond to the suggestions one from the other, when, unless restrained by a principle of action capable of resisting their reciprocal and combined influence, the individual becomes committed to some act of egregious folly, it may be bearing all the similitude of crime. In the individual enjoying perfect health, there are instances in which analogous feelings are experienced, when circumstances engender the predisposition,

and a proximate cause for its development almost coincidently occurs. How many have, from being placed in an elevated and unguarded position, when the physical influence of the atmosphere, and the psychical influence of the ideas, react on each other, experienced such a revulsion of the feeling of self-preservation as urged them to commit a suicidal act, to which their unclouded consciousness, morale, and natural inclinations, were opposed! We believe that in the condition of the female system to which we have alluded, acts are perpetrated as little according to the healthy, free, and deliberate exercises of the individual, and for which they should be considered as equally irresponsible; in which, previous to their commission, to all appearances, perfect physical and mental health existed; and subsequent to which a full consciousness, and all the bitterness appertaining to the commission of the act, are experienced. Yet, in cases of this nature, at such a moment, the individual was, for the time, altogether irresponsible; being irresistibly urged to the commission of the act to which the mind was morbidly attracted, and for which the motor powers simultaneously yielded. The case of Charles Mathews in a measure illustrates this phenomenon; and we consider that many of those otherwise inexplicable examples of mal-appropriation, which occur in the persons of honest, unexceptionable characters, are to be similarly classed. This form of disease, it is not impossible, may be the first evidence of special derangement of the moral faculty, from which, however, it, in its primary development, differs; since the integrity of the moral principle seems to be intact, except as far as may be inferred from the impulsive act. It also is to be distinguished from monomania, inasmuch as the intelligence, when aroused to its consideration, comprehends the full and true relation its commission involves. While recognising the principle which should guide in our diagnosis of such cases, we are, at the same time, fully conscious of the almost interminable difficulties besiegling its application. We believe, however, that as the reciprocal sympathies of mind and body are more closely studied, a clearer conception of this condition will be established, and phenomena we have but imperfectly alluded to be more fully appreciated.

We have mentioned the necessity of a principle of action as necessary for self restraint. From this two questions arise:—

1st. To what is this principle of action to be referred?

2nd. What are the conditions essential for its operation?

The answer to the first inquiry happily rests with every individual. The well regulated mind may be said, in the or-

dinary affairs of life, to act aright instinctively, not from any premeditation that a particular line of conduct is right, but because any other line of conduct would at once become the occasion of mental pain. Self-examination assuring us that this principle of action is fixed and unchangeable, we are led to the conclusion that it cannot therefore depend on the exercise of the intelligence, nor yet result from the operation of the emotive faculty, for, though the harmonious co-adaption of each of these separate faculties is essential for its due recognition, yet while adequate to guide the one, it is, we may affirm, the ultimatum of the other. This principle of action is, if we may so express ourselves, a pervading power which rests in and yet is not of the mind. Proceeding from without, it supplies the light within. It is evident in the world around us. The operations of nature show its physical manifestations; the devotional exercises of the untutored savage attest its universal presence. Education and religion can but develop and direct; they cannot create it, its existence being neither dependent on the operations of the one, nor capable of being replaced by the offices of the other, since without it, the mind would be but an instrument for superior animal pleasure, and religion a motiveless exercise of what should therefore be regarded as senseless observances. Its light may be obscured; it cannot be quenched:—its course may be perverted; it cannot be stayed, so long as intellectuality appertains to man. We know not wherein this principle rests. Piety, truth, love, and justice, are its growth: rational self-love being as nothing in its estimate, individual enjoyment but the least of its results. It is in truth that *divinæ particula auræ*, which, reflecting on the creature brightness from another sphere, raises him above the conflicting interests, miserable jealousies, and many petty inducements to crime, besetting on all sides his journey through a changeable community and a changing world.

The condition essential for the operation of this principle is psychological freedom of mind. We use the term psychological as contradistinguished from metaphysical freedom on the one hand, or that condition in which vice, with the skilful sophistry of guilt, exercises its pernicious influence on the other. In the character of cases to which we have so imperfectly alluded, this psychological freedom becomes for the time being suspended; the regulating principle is placed in abeyance; the act being but the mechanical expression of a passing morbid condition.

It may be urged that the object of the law is, to so correct
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the mind of the offender by punishment, and to so confirm the principles of the community by example, that while the depraved may be reformed, the weak may be strengthened, and thereby this principle of action be maintained in its fullest integrity. We admit all this. We will even allow that the recognition of an irresistible impulse, previous and subsequent to which full rationality is affirmed to exist, offers an easy explanation for any crime, and yet we cannot shut our eyes to the fact, *that cases of this nature have occurred, and may occur again.* Law in their adjudication becomes divested of its severity, since justice restrains its exercise to their preservation as regards the community, and to the personal safety of the individual in whom such a manifestation must be regarded as at least indicative of a psycho-physical aptitude requiring anxious and close attention. The question of punishment is, we conceive, merged in that of volition and health. If *disease*, as contradistinguished from *vice*, be present;—if insanity, the result of abnormal psycho-physical action, as distinguished from that unsoundness of mind and depravity of morals which is characteristic of the operation of sin and crime, be allowed to exist; we confess our inability to propound any rules by which the creature could be thus constituted the avenger of his Creator; or, allowing the doctrine involved in such a practice to be correct, we know not any means that should determine with certainty the extent of such morbid operations, and thereby assign a limit to our endless conjectures. Sooner, to use the words of Ideler, “could we see upon the disturbed waters the clear image of what surrounds us, more easily calculate the status of every wave, than find in the ebb and flow of such thoughts the mirror of our relation to nature, or the law of our changing emotions.”

The close association which seems to exist between suicidal and homicidal mania has attracted the attention of most writers, who attribute them both to a morbid perversion of the natural instincts; the same causes which originate one being adequate to the production of the other. The Monument in London, the Place Vendôme in Paris, have furnished many examples in proof of this assertion. Though the act of self-destruction be opposed to the first principles of our nature, yet we incline to the opinion, that in every instance the commission of suicide cannot be regarded as a proof of insanity; since it may but argue the acme or last desperate effort of vice in one who, knowing that the just rewards of his evil deeds await him, in recklessness of his life, by a final resolve attempts to

anticipate the operation of the law. Such an act we do not believe is a whit more indicative of insanity than that dogged indifference to final judgment and public execration, witnessed in the conduct of many of the worst criminals, whose last ambition seems to be, that their equally reckless companions among the motley crowd may witness their "dying game." We cannot, therefore, in all cases, infer the animus which led to the homicide, from the mere fact of the subsequent suicidal attempt, be it successful or otherwise.

The diagnosis of this particular operation of disease, in its simple and uncomplicated form, rests chiefly on negative rather than positive grounds; and may be derived from events preceding, pending, or subsequent to the commission of the deed. In contrasting homicide the result of disease, with homicide the result of vice—though they may have many features in common; though the nature of the acts be identical, and the means adopted for their perpetration the same—we still have abundant proof to satisfy us that—

"Murder, though it hath no tongue,
Will speak with most miraculous organ;"

since each day declares that the mysterious working of Providence guides the retributive justice of man, and enables him, by a chain of circumstances, to arrive at truth, though craft, and subtlety, and the deep resolves of human intelligence, have been strained to the uttermost for its concealment.

Following in the steps of other writers, we may thus particularize some of the principal differences between the criminal and insane impulse:—

a. The criminal premeditates his plan, and, of necessity, selects his victim. The impulse has no premeditation; and has not, of necessity, a selection.

b. The criminal act is the consummation of previous criminal desire. The impulsive inclination either originates with the act, or is unassociated with the object of it.

c. The criminal act is generally complicated. The simple impulsive movement never is so.

d. The criminal conceals the deed he purposes to commit, and after its perpetration endeavours to escape its consequences. The impulsive action is acknowledged and deplored; while, subsequent to its commission, its detection is not avoided.

e. The criminal, if he has not accomplices, has at least vicious associates and explicable motives. The impulsively deranged never has accomplices, is without rational motives, and may, in his social relations, be unexceptionable.

f. The criminal usually selects victims against whom hostile feelings exist. The impulsive acts without discrimination, and not unfrequently violates all natural affections.

g. The criminal carries his evil practices no further than the gratification of his evil passions in the commission of the act may demand. The accomplishment of the impulsive act by no means removes the impulse, or satisfies the morbid propensity.

In our considerations respecting the varied forms which monomania may assume, as also in our analysis of unsoundness of mind, chiefly evidenced through derangement of the moral faculties, we have perceived that the supervention of an homicidal impulse may, in many cases, constitute but the climax of pre-existing symptoms. The most we can, therefore, attempt is, to state what those general rules are which may guide us in our opinions, and enable us to recognise the various forms in which impulsive insanity is known to occur,—when, by the careful and minute investigations of all pre-existing, coincident, and subsequent facts, we may at least find the nearest approximation to truth. We venture on the following conclusions as being of importance for such an end:—

I. Impulsive insanity exists as a special form of disease in its manifestations, uncomplicated by other phenomena.

II. The patient may be fully cognizant of the civil and ethical relations of the particular act, whose perpetration he is unable to desist from.

III. In one class of cases the impulse may be successfully controlled, and a considerable period intervene between the origin of the impulse and the commission of the offence.

IV. In a second class of cases the commission of the offence is coincident with the origin of the impulse.

V. In both these cases the previous history may fail to account for the morbid phenomena.

VI. The diagnosis of this affection may be stated to rest in the positive nature of the crime, and the negative character of the symptoms.

VII. Though pathology fails to establish fixed psychopathic relations for this form of mental unsoundness, yet the existence of every lesion of the nervous structure becomes an important element in diagnosis.

VIII. Observation affirms, that psychical sympathy, or imitative propensity, is one of the most frequent of its exciting causes.

IX. Where the predisposition has been established, the immediate or proximate cause of its development may rest in

any object capable of exciting emotions, more especially if such excitement accords to the predisposition.

X. This predisposition may exist without manifesting such signs as would lead to its detection, previous to the commission of the homicidal act.

XI. The proximate cause of the homicidal impulse has, of necessity, no further relation to the homicidal act.

XII. When the homicidal impulse arises, pending other forms of mental disease, its existence is to be regarded as a symptom of such disease, and to be explained accordingly.

XIII. That, under such circumstances, the special characteristics of this homicidal impulsive affection are lost in those which appertain to that form of insanity with which it may be conjoined.

(To be concluded in our next.)

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Lithotomy Simplified: or, a New Method of Operating for Stone in the Bladder; to which is appended, an interesting and unique Case of Cœsarean Section. By GEO. ALLARTON, M.R.C.S., &c. London: Ash and Flint. 1854. 8vo, pp. 80. Illustrated with seven woodcuts.

On Electro-Lithotrihy: or, the Application of the Mechanical Force of the Electrical Discharge to the Disintegration of Stone in the Bladder. By GEORGE ROBINSON, M.D., L.R.C.P.L., &c. London: John Churchill. 1855. 4to, pp. 16. With a Lithographed Plate.

NOTHING is more alluring to the mind than any proposal by which the method of accomplishing a great result is simplified and rendered certain of success. This obtains in surgery, as in every other practical art or science. "Lithotomy simplified!" what a dazzling announcement! what a field does it not open to suggestive reasoning. Lithotomy, one of the grandest undertakings in operative surgery, the most complete of all operations in its ultimate steps, and one of the most important in results, "*simplified!*" This is in truth a startling declaration. Let us, however, take care not to become prenaturally fascinated. Before we leave the beaten track for a new road we should ascertain very certainly what are the advantages that the new one opens, lest, leaving that which is well-known, and not finding a better path, we become bewildered, and unable to retrace our steps. We are far from giving opposition to the spirit of innovation; improvement cannot advance where it is suppressed; but we wish to damp that excessive ardour for novelty by which every new suggestion is hailed with enthusiasm, and every new

method of attaining an object adopted without comparison, and without reference to substantial advantages.

The phrase "lithotomy simplified" would imply that the ordinary method of performing the operation is *complicated*—let us see, 1st, Whether such is the case; whether the lateral operation for stone is complicated, and needs amendment; 2nd, Whether the plan proposed by our author is *simple*, and so far superior to the other method as to demand its adoption in preference.

With respect to the first point we unhesitatingly assert, that the lateral operation of lithotomy is beautifully simple and perfect, and, as regards rapidity of execution and precision, no operation possesses these attributes in a more striking manner, where the necessary manual dexterity exists. Take the lateral operation as performed on the child, and in what does it consist? It consists, in fact, when skilfully performed, of three incisions, which follow each other in rapid succession,—an external incision down to the urethra; one to expose the groove in the staff; and a third which divides the prostatic part of the urethra and neck of the bladder to the necessary extent. This done, the stone lies ready for the forceps. Can anything be simpler than this? But, says Mr. Allarton, this is a most dangerous operation, that the mortality from it is frightful; and this statement he confirms by arraying the opinions of a long list of eminent surgeons, British and French. We do not deny that the statistics of the lateral operation, if we include *all* cases, those of persons after puberty, in middle age, and in advanced life, and taking also the tables furnished by the Continent, as well as by Great Britain, are far from encouraging; but if, as we should do, we confine lithotomy to the case of children, leaving lithotrity to deal with stone in the adult, the mortality from the lateral operation dwindles to a comparatively small percentage. The division of the prostate gland and neck of the bladder with the knife it is which our author conceives the principal source of danger in lithotomy; and he contends that if dilatation be substituted for cutting, any calculus can be removed without the least risk to life. The following is the description of Mr. Allarton's operation:—

"I introduce a grooved staff in the usual manner, and of the usual size, and confide it to an assistant, with directions to keep it perpendicular and hooked up against the pubes; I then introduce the index finger of my left hand into the rectum, placing its extremity in contact with the staff, as it occupies the prostate, and press it firmly against the staff, so as to steady it, then, with a sharp-pointed straight knife, with tolerably long and rough handle, I pierce

the perineum in the middle line, about half an inch above the anus, or at such distance as may appear necessary to avoid dividing the fibres of the external sphincter,—I carry the knife steadily and firmly on till it strikes the groove of the staff, the deep sphincter lying between the knife and the directing finger, which enables me to judge of the distance as the knife passes along. If the incision be not made exactly in the median line, the contracting fibres of the injured muscles draw the point of the knife from its direct line and interfere with the accuracy of striking the staff, hence the advantage of the long rough-handled knife, which affords a firmer hold and better purchase. Having struck the groove of the staff, I move the point of the knife along the groove towards the bladder a few lines, and then withdraw it, cutting upwards (as shown in Plate 1), so as to leave an external incision of from three-quarters of an inch to one and a half inches, according to the presumed size of the stone,—the escape of urine indicates the entrance to the urethra. I then introduce a long ball-pointed probe or wire through the external opening into the groove of the staff and slide it into the bladder, to sufficient depth to insure its safe lodgment in that viscus, and withdraw the staff. I then well grease the index finger of the left hand and pass it along the probe, with a semi-rotary motion, through the prostate into the bladder; which procedure is achieved without difficulty, and when the stone is free it comes at once into contact with the finger, and, if of moderate size, passes at once into the wound on withdrawing the finger, the patient having power to strain upon and thereby facilitate the extraction of the stone; this last-mentioned power being one of the great advantages of this operation; the incision being made strictly in the median line, no muscles are divided, and the integrity of the bladder being preserved, it is under the control of the patient, who exerts, at the wish of the surgeon, a powerful propulsive effort, which keeps the stone in or in contact with the internal extremity of the wound, where it is easily seized by the forceps and extracted by mild persevering traction. Now, as the aperture is necessarily the size of the finger which produces it, if the stone be large, some other dilating power must be employed in addition to the dilating effect of the forceps and stone combined; for this purpose Weiss' three-bladed female dilator, Arnott's hydraulic dilator, or, what is at once ready and effective, the addition of the vulcanized India rubber finger stalls one over another until the finger is sufficiently enlarged for the purpose, the outer covering being well lubricated with lard before being introduced. But Arnott's dilator, where it can be procured, is by far the most efficacious though not the most expeditious means. Should the stone be of unusual size, it may be readily broken by a short, strong, and straight lithotrite, or by a strong and suitable pair of forceps closed by a screw, if the stone be soft and yielding—I say readily, because the stone is, in this operation, within so short a distance of the external aperture that mechanical aid can be brought to bear upon it without the slightest difficulty or risk; again, should the stone resist the efforts

to crush or extract it, the wound can be readily enlarged upwards or downwards, by dividing the deep fascia, or even be converted into a bilateral aperture sufficient to extract any average sized stone. I believe the deep fascia to be the great obstacle to the extraction of the stone: I have observed that it acts like a ligature round the finger or forceps, and resists the extraction of the stone. The patient suffers little in this operation, and merely complains of the pricking-stabbing sensation of the first thrust of the knife, the subsequent extraction of the stone does not appear to cause pain; he passes his urine freely by the urethra as well as by the wound, from the time of the operation, and there can be little doubt that the wound might be nearly healed by the first intention with perfect safety. Two of my patients were up and out the day after the operation, and one was walking out on the third day (a cold, snowy, frosty day). The wound left entirely to nature, without tents, &c., heals in about three weeks. The patient, from the completion of the operation, excites no anxiety for his safety—he usually sits up and moves about on the following day, and I cannot well imagine the advent of inflammatory or other bad symptoms."

It will be seen by the foregoing that the method of operating for stone, proposed by Mr. Allarton, is but a modification of the old Marian operation, and differs little from that practised by De Borsa, as our author candidly acknowledges. Why then, may we ask, if the principle which these methods of operating involved was found by experience to be good, was it superseded altogether by another? We readily admit that Mr. Allarton's operation, or one on that principle, would, in many instances, answer remarkably well; nay, that in particular cases it would be preferable, as it would be undoubtedly safer, than the ordinary method of operating; but we repudiate the idea of making it a universal substitute for the lateral operation—of superseding a brilliant by a slow, clumsy and round-about undertaking. Let us consider the steps of Mr. Allarton's operation. First, the finger is thrust into the rectum; then a knife is plunged through the perineum to the urethra; next the staff is laid bare; then a "long ball-pointed probe" is passed into the bladder, and lastly, the finger is forced through the prostatic part of the urethra into the neck of the bladder. Then comes the extraction of the stone, which, if it be of moderate size, requires the employment of some dilating instrument, such as Weiss' or Arnott's, in addition to the finger, and if it be very large, must be broken up by the lithotrite and removed piecemeal. What a clumsy, roundabout method of accomplishing the extraction of a calculus, compared with the lateral operation, is this "*lithotomy simplified.*" But the advantages of this operation, according to its proposer, are the following:—

“ The impossibility of missing the bladder; the smaller amount of cutting than in the lateral operation; the neck of the bladder being uninjured; the smaller amount of blood lost; the prostate being merely dilated, not incised; the urine being at once passed by the urethra as well as by the wound, unless union by the first intention be effected; the facility with which the stone is reached, the patient being able to propel it towards the wound; the very short distance between the external opening and the interior of the bladder; the capability of breaking or crushing the stone, and washing out the bladder and freeing it from any minute particles; the small amount of pain; the absence of danger from urinary infiltration; no muscle or vessel of any consequence being divided, no subsequent imperfection can arise; no danger of wounding the rectum; the rapid recovery,—the patient being able to go about the next day; and the great facility with which the operation can be done by any practitioner of ordinary skill and ability.”

Mr. Allarton certainly requires no trumpeter to sound forth the merits of his operation. The foregoing is a long array of individual advantages which, in his opinion, it possesses. We cannot follow this long list, but will content ourselves by reducing the reputed advantages of the operation to two, and endeavour to weigh their value fairly:—First, the ease and certainty with which the operation can be performed; secondly, its safety.

With respect to the first ground, we deny that Mr. Allarton’s operation is so very easy and certain; and if it be, why, may we ask, should he have deemed it necessary to construct a peculiar sort of knife for insuring the accurate striking of the staff? The median operation may, no doubt, be found easier of accomplishment than the lateral, by those who have not sufficiently practised either; but surely there is not that great difference between the two operations, that any surgeon who can perform the median *skilfully* could not also perform the lateral *properly*. Upon this ground we cannot admit that Mr. Allarton’s operation possesses any comparative advantage of much weight.

As regards the second ground—its greater safety,—this is a consideration of far greater importance. Safety, as connected with any operation, should outweigh all other considerations. Now, we do not wish to depreciate Mr. Allarton’s operation in every particular; we freely admit that the median is, on the whole, less liable to fatal results than the lateral; but is the former devoid of all danger and unpleasant consequences? If not, can the greater amount of safety on its side have weight sufficient to overbalance all the advantages of the lateral operation, and to turn the scale entirely in favour of the median? We

think not. If freedom from danger were exclusively on the side of one operation, then we say, without hesitation, let that one be adopted. But is Mr. Allarton's, or any modification of the Marian operation, perfectly free from risk? Is there no danger from the supervention of the different forms of diffuse inflammation? Is there no fear of any serious consequence from the efforts made to extract a calculus when the parts are in a state of inflammation? Is there no probability of dangerous hemorrhage? Lastly, can no mischief be done with the knife in the performance of the operation by an awkward operator? Then, leaving positive danger to life out of the question, is there no likelihood of very unpleasant consequences from the degree of dilatation necessary for the extraction of a large calculus?

But we cannot afford space to pursue this subject further. We give to Mr. Allarton the fullest credit for the ability he has displayed in modifying an operation which had fallen into disuse; in giving to it greater precision in the performance of its different steps; but, notwithstanding the energy with which he puts forward the claims of the operation in question, we cannot for a moment allow that it is "lithotomy simplified," nor can we receive it as a substitute for the lateral method of operating. So long as the author does not press his operation on general or exclusive grounds, we shall give it our full recognition, for, as we have already observed, it has advantages in particular cases; but to adopt it universally, and to consign the lateral operation to oblivion, would, in our estimation, be the abandonment, on *very inadequate grounds*, of those principles which have raised operative surgery to its present pitch of brilliancy and perfection.

We have said that lithotrity is the operation to be adopted in the case of stone in the adult: this leads us to pass a few remarks on the treatise of Dr. Robinson, which proposes a really novel modification of the method of crushing a stone in the bladder. He suggests "the application of the mechanical force of the electrical discharge" for this purpose—electro-lithotrity. Truly we live in the age of invention, of the application of science to practical purposes. How much has, within the last few years, been accomplished, and how much more proposed for achievement! We can transmit communications along thousands of miles with the lightning's velocity; we have proposals for the destruction of impregnable fortresses and formidable fleets; and, on an humbler scale, we have a suggestion now for the employment of electricity with the view of over-

coming a very annoying enemy in his stronghold—a calculus in the bladder! For the last half century, every conceivable means of reducing urinary calculi, by a purely mechanical process, has been resorted to. They have been drilled, bored, sawn, pulverized, and broken up through the instrumentality of the hammer and the screw; but this is the first proposal we are aware of by which electricity is to be employed as a force, with the view of disintegrating a stone in the bladder.

The author first passes in review the different methods which have been adopted from time to time for the removal, disintegration, or chemical solution of urinary calculi, commenting on each, particularly on lithotripsy; and then gives the circumstances under which he was induced to think of trying the agency of electricity for the purpose of effecting the disintegration of these foreign bodies:—

“ The great and diversified powers of electricity have long suggested the possibility of its being employed as a means of effecting the destruction of calculi in the human bladder, and thus obviating the necessity for the painful and dangerous operation of lithotomy. But the attempts hitherto made in this direction have contemplated the solution of the stone through electrolytic action rather than its disintegration by the mechanical force of the electrical discharge. A moment’s reflection will, however, suffice to convince us that the force which shatters a steeple or cleaves an oak is also capable of reducing to fragments the largest urinary concretion. Nor can I imagine any other than the following sources of objection to the practicability of employing this force for the purpose of breaking down vesical calculi *in situ*, namely: 1. The danger to the living structures from the necessity of using a powerful discharge. 2. The difficulty of conveying the force to the required spot, or, in other words, causing the discharge to pass through the calculus. The first objection is, in a great measure, met by the fact of our being enabled to regulate with the utmost precision the degree of intensity of the discharge, and it would be almost entirely removed were it possible to apply the disruptive force of electricity without any portion of the body being included within the circuit traversed by the electrical current. The second objection rests upon the mechanical difficulty of bringing the calculus within the direct route of the electrical discharge, but would scarcely apply were it demonstrated that the disruptive effects of electricity can be obtained without any such direct transmission of the current.”

After alluding to an experiment performed some time ago by Mr. Crosse, he goes on to say:—

“ It being thus shown that a lateral disruptive action takes place within a certain distance of the seat of discharge, the idea at once suggested itself to me, that by using two parallel wires separated at

their extremities like those in Mr. Crosse's experiment, and similarly connected with an electrical machine or Leyden jar, bringing their ends in contact with the surface of a calculus, and then allowing a series of moderate discharges to take place between the extremities of the wires, a disintegrating effect would be produced upon urinary calculi of the same nature as that witnessed in glass and quartz."

He next gives the results of four experiments in which he tried, with success, the mechanical force of the electrical discharge upon urinary calculi, and then draws the following conclusion:—

"On the whole, I am of opinion that the electrical force, applied in the manner indicated, will be found quite as efficient for the disintegration of calculi in the bladder as the more formidable analogous operation of lithotripsy, occasionally practised; and, as regards simplicity and security, the electrical apparatus certainly appears preferable to the instruments used for crushing the stone by ordinary mechanical force."

The part of the treatise from which the foregoing extracts have been taken is a reprint of a communication to the Royal Society of London, made last year. Since that time Dr. Robinson has frequently repeated the experiment, and has, "in every instance, succeeded in breaking into fragments the calculi submitted to the process."

"The *instrument* for conveying the electricity to the calculus may be variously arranged, but must always consist essentially of two metallic wires or plates carefully insulated, and touching the surface of the stone simultaneously, and at a short distance from each other. For an adult, a tolerably efficient instrument may be made from a large elastic catheter, by cutting about an inch off its end, and then passing through it two copper wires, insulated by being carefully coated with silk thread, gutta percha, &c. To the ends of these copper wires short pieces of platinum should previously be soldered, each of which may terminate in a small conical bulb of gold or platinum. The wires may then be retained in position by pouring melted gutta percha into the interior of the catheter, and the end of the instrument may be formed of a similar material, moulded to the proper size and shape, so as merely to leave the two gold or platinum cones projecting like very small pin-heads from the extremity of the instrument. The remaining portions of insulated copper wire projecting from the handle of the catheter should be bent in opposite directions, and so elevated as to prevent the possibility of any urine or other liquid coming in contact with the wires in that part of their course."

Now we consider Dr. Robinson entitled to the highest praise, for proposing so ingenious and scientific an application of the powerful agency of electricity. The idea which first suggested such a plan to his mind seems to have been perfectly original, and was based on a thorough knowledge of the properties of the electrical fluid; while upon the means of rendering it most efficient and practically applicable he evidently expended much thought and trouble. Still, we feel bound to say, that any such plan as the one here recommended is practically *useless*. It might be easy enough to keep the metallic points against a very large calculus for the necessary length of time; but could this be done with any certainty in the case of a small stone? Nay, more, suppose a large calculus split or broken up into moderate sized fragments, how is each of these to be operated on separately? The author himself admits that,—

“When the calculus has been split or broken by the electrical discharge, it will afterwards be necessary to place the end of the instrument on the large fragments singly, in order to effect their further disintegration, but on no account should the discharge be passed at random among a quantity of sand or minute particles; for the mutual repulsion existing at the moment between these fine particles causes them to fly from each other a short distance, and with some force.”

How, then, are the smaller particles to be got rid of? If they exceed the size of a pea, they will not pass through the urethra in ordinary cases. It is quite evident that Dr. Robinson has succeeded in establishing the practicability of breaking down even large calculi by the lateral disruptive action of the “electrical discharge,” but this is not what we have to consider; the question with us is, whether any such plan can be applied in a strictly practical manner. We consider that it cannot. It may be urged that it has not yet received a trial upon the living subject; this is only an argument against its adoption, for few will be found willing to employ a method not already tested, which might, through some accident, be productive of serious results, and the aim and end of which can be attained by other means with certainty, and without as much danger, if properly executed, as attends almost any operation. For our own part, then, if the practicability of curing a case of stone in the bladder, by the means proposed, were demonstrated to our satisfaction, we should give the preference to the ordinary method of performing lithotripsy, since we cannot but think that it is far simpler and easier of accomplishment, and much more

certain in its results. We repeat our conviction, however, that this plan is practically valueless,—a thought which seems to have flashed across the author's own mind, as he penned the last paragraph of his treatise, for he observes:—

“The preceding suggestions are necessarily based upon the results obtained in my experiments, the chief and immediate object of which was to demonstrate the practicability of breaking down even large calculi by the lateral disruptive action of the electrical discharge. In practice, however, it appears to me probable that the greatest benefit will ultimately be found to result from the gradual wearing down of a stone, by inducing in it a disintegrating electrical action, similar to that by which in Mr. Crosse's experiment the glass was perforated. In other words, I look to the efficient substitution of a series of a comparatively feeble electrical sparks for the less numerous, but more concentrated, discharges of the Leyden jar, as the great desideratum and perfection of electro-lithotomy.”

Such a modification of electro-lithotomy might answer in cases of very large calculi which would lie beyond the reach of the ordinary operations of lithotomy and lithotomy.

Chloroform; its Properties and Safety in Childbirth. By EDWARD WILLIAM MURPHY, A.M., M.D., Professor of Midwifery, University College, &c., &c. London: Walton and Maberly. 1855. 8vo, pp. 72.

THE subject of chloroform has, to a great extent, engaged the attention of medical writers, but the controversy regarding its merits has not been carried on in that spirit which would have been desirable. On one side were to be found indiscreet advocates; on the other, crotchety and some few fanatical opponents. It may with truth be observed that this agent in its relation to the members of the medical profession should be best characterized as an irritant. The combativeness of the late Professor of Midwifery in the University of Edinburgh appears to have descended on a number of obstetrical practitioners; and accordingly, among the most pugnacious in this literary warfare we find some of those who devote themselves to that branch of medical science. Sprung from a race proverbial for not resisting the temptation to a “passage of arms,” Professor Murphy entered the lists as an advocate for chloroform in midwifery practice; we feel, however, bound to add, that his enthusiasm was guarded by discretion, and consequently we were gratified by the appearance of the present work. Con-

fident, from a knowledge of the author as a former teacher in the Irish School of Midwifery, that the investigation of the subject which he undertook would be characterized by scientific research, judgment, and necessary caution, we have not been disappointed in our expectations. The work contains a candid exposition of the effect of chloroform in childbirth, as witnessed by the author; and we shall now proceed to bring under the notice of our readers a few of the most important opinions which are advanced by him. After some remarks on the properties of chloroform and its action in comparison with alcohol, ether, &c., the author alludes to its action on the nerves:

"The action of chloroform on the nerves, and its manner of causing anæsthesia, is best observed by the effect of small doses gradually increased. The blood conveys the vapour to the heart, the heart transmits it to every nerve in the body; but these are not all equally under its influence. Of the three divisions of the nervous system, the cerebro-spinal is the first affected, then the reflex, and lastly the ganglionic nerves.

"The first communicates sensations, motive power, volition, reflection. A small dose of chloroform will annul sensations without disturbing the power of motion or consciousness. An example will explain this. A lady suffered from intense pain from abscess in the breast, which was on the point of bursting. She could not bear to have it touched ever so lightly. I gave her an inhaler containing chloroform; she held it to her mouth, and inspired the vapour two or three times; I could then touch the breast without difficulty. Her face was directed from me, breathing the chloroform, and while thus occupied I plunged a lancet into the abscess. She did not feel the least pain, and was delighted to find the object of her dread so easily removed.

"If the dose be increased, the power of motion is controlled; the hand drops, the patient cannot move herself; volition and consciousness begin to be affected; an imperfect sleep supervenes, the patient remaining in a kind of doze, yet will answer a question if asked distinctly; she will tell you that she hears everything that is said, but this is evidently not the case. As the cerebro-spinal system is getting more completely under the influence of chloroform, the next, the reflex division, becomes engaged. This presides over all the movements termed sympathies, over the passions or emotions, and over the whole respiratory apparatus. The exciter nerves of this division are first affected, the irritability of the eyelids, of the nostrils, of the fauces, and lastly of the glottis, is controlled; the motors then lose their power; the eye is drawn upwards; the respiration becomes stertorous; the action of the thoracic muscles is slower, less perfect; the inspirations are incomplete, and a form of asphyxia takes place, which may be fatal. Hence the importance of observing the influence of this agent on the respiratory nerves. Fortunately,

this loss of power becomes evident from the stertor which it causes, and although this may occur as safely as in natural sleep, still it must be looked upon as a beacon to indicate danger. Thus far chloroform may be safely used, but if we pass one step beyond this, and increase the quantity of vapour, or, what amounts to the same thing, if we do not carefully guard against its too great accumulation, that danger is instantly present. The respiratory tract is the last portion of the reflex division of the nervous system which becomes affected, stertor is its earliest evidence; the thoracic muscles then lose their tone; the inspirations are less perfect, and at longer intervals; the chief muscular action is carried on by the diaphragm. At length this also ceases, and death takes place."

Perhaps the fact above mentioned, and now generally admitted, that the inhalation of chloroform can annul sensation without disturbing the powers of motion or consciousness, is the point of greatest practical interest. If the benefit from this agent was merely limited to this effect, with perfect safety to the person using it, we should rank it among the greatest boons conferred on mankind; but the important question arises, can chloroform be administered, even in a moderate way, to every individual without the possibility of danger? The records of surgery, unfortunately, too forcibly give a reply in the negative. Professor Murphy would appear in the above quotation to express a different opinion, qualified, however, by the belief that the danger from chloroform depends on its being improperly administered in a rapid manner, and not sufficiently diluted with atmospheric air, producing thereby spasm of the glottis, sense of suffocation, fatal influence on the reflex nerves, and ultimately paralyzing the heart.

We fully admit, as a general rule, the safety of the use of chloroform under such wise precautions as laid down by Dr. Murphy; we even allow the probable correctness of his statistics, taken from the London hospitals, proving the fatal cases as one in a thousand; still, the important fact remains established, that deaths have occurred from its use after careful administration and from a small quantity of the agent. With this knowledge in his mind, how can the practitioner be free from the anxious feeling but that the case at the moment under operation may prove the exception, not the rule. It is to be hoped that future investigation will remove the difficulties which surround this subject.

Our author alludes to the danger of using chloroform in persons with diseased heart. We are of opinion that the investigation of the condition of this organ should never be neglected; and a weakened action, or obstructed circulation, should serve as warning against the exhibition of chloroform to its full ex-

tent. It would be very desirable that we could form some estimate, beforehand, of the susceptibility of patients to the influence of this agent. A knowledge of the susceptibility of persons to the effects of alcoholic fluids from previous experience might throw some light on this subject. We know what variety exists in the effects of the same quantity of wine or spirituous liquors on different individuals; and it may be probable that he in whom intoxication is easily induced would be soon influenced by a small portion of chloroform, and *vice versa*. This rule could not apply to the broken-down drunkard, probably labouring under organic disease, but from the analogy in the actions of alcohol and chloroform on the human body, it is not too theoretical an opinion that a person accustomed to moderate stimulation from the former would be more likely to resist the poisonous influence of the latter. Our experience on this point is limited, but, so far as it goes, in favour of the view here taken. There may be also an idiosyncracy in relation to the effects of chloroform, as in some of the fatal cases death was almost instantaneous, and not to be well explained. Before dismissing this part of the subject, we shall allude to a point, obscure in itself, and presenting difficulties both as to its support and refutation:—we refer to the supposed freedom from pain *in all cases* while the patient is in the sopor from chloroform. It is assumed that, because the person exhibits no suffering at the moment, and after recovering from the sopor denies the recollection of pain, therefore, no pain was felt during the operation. We cannot subscribe to the accuracy of this deduction; it is inconclusive. The opinion of an individual enjoying perfect intelligence, is taken as to his cognizance of an event occurring at a moment when, although perception may have existed, he was deprived of volition and the exercise of reflection. The temporary suspension of these latter powers does not necessarily imply unconsciousness; and Sir Benjamin Brodie, in his "Psychological Inquiries," observes, that he does not like using the word unconsciousness as the result of such agents as chloroform; he further remarks:—"The mind may be in operation, although the suspension of the sensibility of the nervous system, and of the influence of volition over the muscles, destroys its connexion with the external world, and prevents all communication with the mind of others. It is, indeed, difficult to say even when the external senses are completely and absolutely closed."

From cases mentioned by Sir Benjamin Brodie, as well as others recorded, it may be assumed as established, that in some affections of the brain, consciousness, with perfect memory, may exist, although profound stupor and other symptoms would

lead the observer to a contrary opinion. Why may not the same principle be applied to cases under the influence of chloroform where some supporting evidence is afforded? The chief foundation for an opposite conclusion is the loss of memory; but antecedent contemplation is necessary for retention, a power of the mind not likely to be regarded as existing under such circumstances. The effects of alcohol on the human system present some analogy to those of chloroform. A man who, to a certain extent, is intoxicated, meets with an injury, complains of pain felt at the moment, falls into a sleep, awakes forgetful of the accident, and is surprised at finding himself bandaged. What may be termed the psychical action of alcohol presents great variation, and sometimes results arise which are incomprehensible. Ordinary evidence of intoxication is not always necessary for the production of loss of memory. We knew a gentleman who was engaged in mercantile pursuits, and was remarkable for sound judgment and forethought. He was of spare habit and marked nervous temperament. This gentleman, in early life, on taking more than a certain quantity of wine or spirituous liquor, although presenting no symptom of intoxication, joining in conversation and expressing himself clearly in argument, would, nevertheless, on the next day, not have the slightest recollection of the passing events of the previous evening from the moment when this peculiar alcoholic influence commenced. On one occasion he was at a dinner, followed by a ball in the evening, he confined himself to a limited quantity of wine at dinner, as was his habit; but at supper he took more, after which he danced, and left the house presenting no sign of ineptitude, with the slight exception of being gay and loquacious. In two hours after, he was awakened from a kind of somnambulism by the rumbling of carts, and found himself, on a fine summer's morning, five miles from Dublin, instantly restored to consciousness, but feeling much fatigued. He turned back, and got into conversation with the drivers of the carts, who remarked that he had passed, walking at a rapid rate, without taking any notice of them; and he looked so pale and fatigued that they fancied he was walking for a wager. All was a blank in his memory from the time of his sitting at supper. This case was essentially a modified form of drunkenness, and the gentleman was never a somnambulist in the ordinary acceptation of the word. An injury to the head may also affect the memory. Sir Benjamin Brodie mentions the following case:—"A young gentleman was thrown from his horse while hunting. He was stunned, but only for a few minutes, then recovered, and rode home in

company with his friends, twelve or thirteen miles, talking with them as usual. On the following day he had forgotten not only the accident, but all that happened afterwards."

It is not to be inferred from our remarks that we completely deny the anæsthetic powers of chloroform; we merely express the opinion, that in some cases the evidence afforded to us is in favour of the fact that anæsthesia is not really, although apparently, induced. In offering this hypothesis, we abstain from intruding on the domain of the pure metaphysician. We regard the brain, when under the influence of chloroform, as in an abnormal condition, and look upon consequent phenomena in the light of symptoms. We feel that this question demands all the elucidation which can be brought to bear on it. We deem it as possible that pain may be more exquisite under chloroform, and regard forgetfulness as poor compensation for such an ordeal, unless it be admitted that the patient is in a better subsequent position as regards the operation.

Looking at the subject in another view, and bringing physiology to our aid, it would teach us that the desired effects of chloroform do not always bear a ratio to the amount inhaled. For example: a patient inhales it to the full extent of sopor, without stertor; she is submitted to a surgical operation, and during its continuance talks incessantly, holding an imaginary conversation. If it be true, as asserted by high authorities, that there is a part of the brain whose office it is to combine the action of the muscles of speech, we can safely infer, that in the case alluded to, the anæsthetic influence of chloroform had not reached that portion of the brain, at least so far as to impair its functions; and we reasonably conclude that there is absence of pain from the fact of the patient indulging in conversation totally unconnected with herself or her sufferings.

On the other hand, we have seen the patient in a deep sopor from chloroform, exhibiting, at the moment of the surgeon's incision, an indescribable nervous excitement lightly passing over the face, and giving to us the idea of an attempt at muscular action, and of the patient's sufferings. We have also witnessed in another case, under similar circumstances, a slight blush coming on the cheek, and a secretion of tears: phenomena which can only be satisfactorily accounted for as being connected with mental emotion.

We shall now quote the following remarks from the work before us:—

"In the second degree, when the reflex system begins to manifest its influence, it has been stated that occasionally the exclamations of the patient are rather exaggerated than controlled. So,

also, when profound sopor is induced, it sometimes happens that she cries out as if suffering from pain; and yet, when consciousness returns, is not aware that she did so. She has no recollection of pain; she will tell you she had none. I was once called to a case of difficult labour in which this occurred. It was the first child, and the woman had suffered very severely for twenty-four hours. The head was arrested in the pelvis, and it was necessary to extract it with the forceps. Chloroform was administered to its full extent. The woman was in a profound but not stertorous sleep. She lay on her side, perfectly unconscious of anything that was done. She did not notice the first efforts at extraction, when, suddenly, as the forceps was pulled, she exclaimed: 'Oh, my back!' She did this two or three times; but as the child was being delivered she said nothing, and seemed asleep. She remained thus for about half an hour, during which time the placenta was separated and the bed settled. When she awoke she was very much astonished to find her troubles over. She did not know when the child was born; said she suffered no pain, and when told that she had exclaimed loudly during the operation, she could not believe it. This fact has been observed by others, and an explanation of it attempted. It is needless to do so; it is sufficient for our purpose to notice it as evidence that, when a patient is under the influence of chloroform, her expressions are no measure of the amount of pain which she really endures. In the transition stage she sometimes exclaims when there is no pain, and is silent when there is. A lady in this state bore the expulsive pains, when the head was being delivered, without complaint, and yet cried out, or rather moaned, after the child's birth, at regular intervals, as if the pains were going on."

We can have no hesitation in the conclusion, that the exclamations of this patient were demonstrations of her suffering from pain; we shall not attempt to account for her silence at other moments, when there was apparent cause for complaint. In labours in which chloroform is not used, we find patients who complain of pain in the absence of uterine contraction; and some, very noisy in the earlier stages, will bear the last expulsive pains in comparative silence.

We cannot further pursue this subject at present. It is one worthy of investigation; but, from its obscurity, uninviting. Our impression is, that the theory of ascribing phenomena which indicate pain as being merely of a reflex character, and apart from sensation, is not supported by the evidence afforded to ordinary observation; simple reflex actions may exhibit themselves in some instances, but they are not indicative of painful feeling being experienced by the patient. In the local use of chloroform we have positive evidence of its anæsthetic power, but in some individuals it fails to exhibit that property,—why, we cannot answer, no more than we can explain the cause of

some persons preserving their intelligence without suffering under operation.

Dr. Murphy states that chloroform need never be administered to the extent of inducing profound sopor in childbirth. We must refer our readers to the book itself for an account of its influence on the parturient woman, and on its mode of administration. This part of the work is both interesting and instructive, exhibiting accurate views. In one opinion expressed by the author we cannot agree, namely, that "the action of the uterus is not generally interrupted under chloroform;" our experience leads to a contrary conclusion, and we are supported by others who had extensive opportunities of observation;—however, the influence of moderate inhalation on the uterus is an unsettled question, and Dr. Murphy's views on this subject are well worthy of attentive and due consideration.

The next part of the work is devoted to answering objections to the use of chloroform in midwifery; here Dr. Murphy is, perhaps, too zealous; his style is bold, but he evidently gives expression to the honest convictions of his mind, and it must be allowed that some of the objections urged against chloroform were remarkable for hasty absurdity. There is a third class in the profession, who, not joining either the determined supporters or opponents of chloroform, are cautious of its administration in midwifery practice, and who feel that more matured experience is required to elucidate points of practical interest in relation to this subject. To all engaged in this pursuit, we strongly recommend the work before us. Dr. Murphy is a decided advocate for the use of chloroform, but the rules he lays down for its administration are remarkable for caution, and worthy of being treasured in the mind of the reader.

In conclusion we may observe, that in dissenting on some points of opinion from the author, we are not the less sensible of his deservedly high professional reputation, and of the respect due to his opinions; we are, however, confident, that there is no member of our profession who more fully appreciates the principle of free discussion in the cause of truth than the learned Professor of Midwifery in University College.

Mémoire sur l'Osteo Myelite. Par M. CHASSAINAC. Paris: E. Thunot. 1855. pp. 36.

THE title of this pamphlet is not quite correct. M. Chassaignac has directed attention, and his remarks apply only, to

the idiopathic inflammation of the medullary canals of bones. The traumatic form of osteo-myelitis has already been ably handled by MM. Reynaud and Flourens. The former described the affection as the result of amputation, and the latter performed many experiments upon animals with a view to elucidate the pathology of the subject. Besides these special treatises, scattered information bearing on the subject is to be found in the works of Dubreuil, Macdonald (Thesis de Callo et Necrosi), Thomson on Inflammation, Craigie, and Howship. As far as we are aware, however, no monograph exists upon the idiopathic form of the disease. This want M. Chassaignac has endeavoured to supply, and we find in his pages the diagnostic symptoms and treatment laid down with clearness and precision.

The affection is by no means common, and from its resemblance to acute necrosis has generally been confounded with it. There are, however, some well-marked points of difference. The pain is of a peculiarly severe character, pulsatile and lancinating; the patient feels his limb heavy and powerless, and on attempting to move it there is a sensation as if the bone were breaking. The heat and redness are considerable; the œdema of the integuments is remarkably hard, and presents a well-defined border where the inflammation stops. The constitutional symptoms are of a typhoid nature, and similar to those of severe diffuse inflammation. In this it specially differs from acute necrosis. If left to nature, the disease advances steadily upwards: the suppurative destruction of the shaft extends into the epiphysis, and through the cartilages into the joint. The superior cartilage is then destroyed, and the disease spreads through it to the next bone. If an incision is made into the soft parts, the periosteum is found sloughy, of a green colour, and under it are globules of oily pus. This oily condition M. Chassaignac considers pathognomonic of the affection, when taken in connexion with the character of the œdema and of the constitutional symptoms. Should the bone be found bare, dry, and hard, it is an evidence of its complete death. He considers amputation the sole resource, as the joints are invariably affected by the twelfth day. His conclusion is, that in a case which presents the symptoms of acute subperiosteal abscess, with severe typhoid fever, where the peculiar hard œdema mounts above the epiphysis, in spite of free incisions down to the bone, the limb should be removed at the joint above the inflamed bone. He gives a preference to the double flap amputation in this case. The operation would, of course, be contra-indicated if the disease had attacked more bones than one, or if there were symptoms of purulent infection.

A Manual of Pathological Anatomy. By C. HANDFIELD JONES, M. B., F.R.S., &c.; and EDWARD H. SIEVEKING, M. D., F.R.C.P.L. London: Churchill. 1855. Fcap. 8vo, pp. 788.

AT the present day there can scarcely be conceived a work calculated to be of greater utility to medical science in these countries than a treatise such as the one before us. It is well known what superior opportunities the alumni of Continental schools have long enjoyed in the department of pathological anatomy. Not that we have not possessed monographs of the highest value upon almost every particular disease; but it is a fact evident to us all, that for many years we have felt the want of such a summary of best established points in the domain of morbid anatomy as this volume purposes to supply. It is manifest, on the slightest reflection, that the advance of rational medicine must be in direct ratio with the dissemination of sound knowledge of structural disease. A careful comparison of the traces which maladies leave upon the bodily frame, with the indications observable during the patient's medical history, is the only safe ground for therapeutic deduction.

These are trite though important truths, and we cannot but greet with much satisfaction the appearance of this Manual, which professes, in the words of the Preface, "to place before the reader a summary of ascertained facts, together with the opinions of the most eminent pathologists of this and other countries; and while offering this extensive selection, they have at the same time endeavoured, in an independent manner, to investigate as much as possible the correctness of the statements they adopted."

To condense such a mass of data as was necessary to give even a general view of the knowledge pertaining to this extensive department, must have been a work of unusual difficulty; yet we are bound to say, after a close perusal of the whole book, the authors have so blended recorded fact with independent experience, that they have rendered their task a readable volume, combining the strictness of scientific research with the freshness of the most recent clinical observation.

We need scarcely say, that the work is, like all Mr. Churchill's manuals, well brought out. The illustrations, with few exceptions, speak for themselves, which is the strongest expression of approbation of Mr. Bagg's abilities we can employ. An Atlas of coloured drawings would of course have been more conformable to the character of the work, but such a course would have necessarily so augmented the price as to have

placed it quite beyond the reach of students and most junior practitioners, for whose special benefit it is of course more especially designed.

This is the joint production of two hospital physicians,—a plan of authorship which we observe to be frequently adopted by the French school, and which possesses peculiar advantages in the present instance. A subject so extensive as is embraced under the term pathological anatomy will of necessity be better handled by a combination of the efforts of a number, each of whom has more especially devoted himself to particular branches. The book comprises twenty-three chapters, thirteen of which are from the pen of Dr. Sieveking, and the remainder by Dr. Jones. We do not profess to present a complete analysis of so extensive a work, as such would be elementary, and therefore unsuited to our pages; we propose merely to indicate the general style and mode of treating the principal subjects respectively claimed by the authors.

The opening chapters are by Dr. Jones, and admittedly after the model of Dr. Williams' "Principles of Medicine." After an explanation of some general terms, we have a well-written section on *functional derangement*; and the original observations of Drs. Hall, Todd, and Bowman, are not merely acknowledged, but endorsed, as the groundwork for remedial treatment. The alterations observable in the *blood* occupy about one hundred and thirty pages, and constitute one of the most important subjects in the entire work; more especially the doctrine of 'Crasis,' as first particularly described by Rokitansky,—a doctrine which Dr. Jones considers will frequently best explain the utility of tonic, or even stimulant, treatment in many cases which, under the old system of phlogosis and solidism, would have been treated by routine antiphlogistic means. The fact is, we have been too long guided by the reins of authority in medical practice. Accumulated, but partial data, combined with the most talented medical pleading, so to speak, have not unfrequently imparted an extraordinary reputation to some favoured individual, whose dictum has thereby become the rallying watch-word of troops of votaries, and become incorporated with the medical mind of an entire age. This tendency to take for granted the opinions of preponderating talent has been common in all eras in medical annals, and in later times was especially exemplified in the Broussais dynasty. We rejoice, therefore, to see eclectic principles so ably and clearly brought forward in the present work, as thereby an impression may be made amongst the ranks of

Young Medicine highly favourable to the development of independent thought.

The subject of *textural changes*, and especially new formations, is largely discussed by Dr. Jones in the chapters immediately succeeding. With the exception of Mr. Paget's myeloid tumours, which are touched upon in consequence of their novelty, the only point we can draw attention to here is, the interesting section entitled cancerous tumours, as this topic has recently created much discussion in the medical world. Dr. Jones' view of the nature of cancer will be gleaned from the following quotations. After describing the principal forms, he goes on to say:—

“ We feel convinced that it is far more important for the student and the practitioner to contemplate steadily the great characteristics of cancerous disease than to load his memory with details of the incidental and trivial. Partly on this account we have not attempted to give any very minute description of the structure of cancerous tumour; for our own examinations have thoroughly convinced us of the non-existence of any special structural character, absolutely and in all cases distinctive of cancer. This point, which is in accordance with the teaching of the best authorities, seems far from being correctly understood in the present day; and we cannot but think that there is still much tendency to over-estimate the microscope as a means for the diagnosis of cancer. It is our opinion that the cases are very rare indeed where the microscope will avail to detect cancer with any certainty, when the naked eye features are insufficient. On the other hand, we have more than once seen unquestionable cancers made up of substance which we should have been led, from microscopic examination alone, to consider as of a simple nature. What may be said relative to the distinguishing of cancerous from other tumours by their mere physical characters, and not by their living actions, amounts to this: If a tumour, on being incised and compressed, yield a whitish, milky juice (the so-called “ *suc cancereux* ”), it is probably malignant; we have, however, failed to obtain this sign from actual encephaloid. If the cell-growth of a tumour is what may be called exceedingly *multiform*, i. e. one particle unlike another, the field of view being filled with utter varieties of shape and construction, there arises a strong presumption that the structure is malignant. If a tumour consist of an abundant cell-growth, lying in a basis substance of slight consistence, and containing very little fibre, it so far bears a close resemblance to encephaloid. If, on the other hand, a tumour consist chiefly of fibre or fibrillating blastema, the presumption of its cancerousness diminishes. We have, however, seen a growth in the liver which had all the aspect of a scirrhouous formation, and probably was so, which yet consisted solely of fibre forming solid blastema. If a tumour infiltrate adjacent parts, it is probably malignant; but all cancers have not this character. The

presence of large cells containing several nuclei, similar to those figured by Lebert and Bennett, would be a strong argument for the cancerous nature of the tumour from whence they proceeded. So, also, we should regard the development of a nucleus into a large granular globule or vesicle, or into any structure very dissimilar to its original condition, or that of the nuclei of natural tissues. In concluding these general remarks we may state, we think, the following position with confidence, viz., that starting from encephaloid as the representative of cancer, *par excellence*, we find the cancerous character gradually declining as we pass through a series of formations, such as we have above described, until we come to those of whose innocent nature there is no question. The exact limit, we believe, at which cancerousness is lost cannot be marked by any characters of a growth itself."

The above extract gives, perhaps, as much of what is really known as to the distinctive characteristics of cancer as can well be laid down; it supplies also to our readers a fair sample of Dr. Jones' style. The whole section, indeed, is full of interest, and indicates enlarged views of a most difficult subject; more especially is this the case in regard to the dissemination and growth of cancer. Dr. Jones gives an opinion as to the eligibility of excising cancerous tumours. As a general principle he is against interference, while he admits, with every clinical observer, if the operation do not aggravate, it may be reasonably expected to delay, the cause of the disease.

The essay on *parasites* in the fifth chapter is from the same pen. Lebert is the author principally quoted, but we do not see that Dr. Jones has availed himself of the contents of the recent excellent and complete monographs of Robin, Bremser, &c.

We come next to Special Pathology, and we find the same author, in the chapters devoted to the *digestive* and *urinary* organs. The divisions are, of course, anatomical, and under these we observe a notice of each separate lesion. The opinions and experience of the best English, French, and German authors are drawn upon as required, and add much to the interest of these sections; but we are concerned to notice what seems to us an unpardonable omission—a systematic, though tacit, ignoring of Scotch and Irish authors. In saying this we do not wish to be understood that we are at all jealous of the distinguished reputation of other schools; but we do think that names which have rendered illustrious the medical institutions of Edinburgh and Dublin should have been more fully noticed in the present work, which will be put into the hands of the rising medical generation.

The essay on *Bright's disease* is deeply interesting, and sup-

plies a very complete view of the most probable nature of this highly important affection. Dr. Johnson's ideas are the basis of the article, and his theory, in the main, endorsed. Dr. Jones objects, however, to the significance with which the former invests the deposition of oil in the degenerating epithelium, which he considers accidental, and not in any way essentially modifying the morbid state. This objection we do not think is conclusively maintained; we think he is more happy in the opinion he expresses when comparing the enlarged and contracted kidneys. The former, he thinks, has strong relations to scrofulous degeneration, while the latter is akin to hepatic cirrhosis.

The subject of *hepatic* lesions is well treated by Dr. Jones. There, as in every structure of the body, the microscope has been employed with marked success in elucidating the nature of many diseases of the liver, hitherto obscure. Kiernan's triumphs led the way; and now, with the aid of such clinical observers as Budd, &c., we can comprehend the relative distinction between diseases of this organ, which were formerly confounded under some such general heading as hypertrophy, or atrophy, or induration.

The last contribution supplied by Dr. Jones is that on the *joints*: it is clearly and ably written, and contains the most recent researches. In this, as in most other parts of the work, the illustrations are exceedingly instructive, though they cannot, in general, be considered other than diagram views. Sir Benjamin Brodie, as he so well merits, figures largely in this chapter. It is well known that, before his works appeared, the most confused and unsatisfactory ideas were held regarding the nature of most chronic articular diseases.

The special morbid anatomy of the *nervous* system, organs of *circulation* and *respiration*, female organs of *generation*, and the *osseous* system, is from the pen of Dr. Sieveking. Succinct description is equally observable here as in the parts of the work already referred to, and the most recent observations and researches are prominently introduced. We cannot afford space, nor would it subserve any useful purpose, to present an analysis of the numerous subjects ranged under these divisions. Suffice for the present to give the reader an idea of the style in which Dr. Sieveking discusses his subjects. Let us take, for example, the following passage on *cyanosis*:

“ *Cyanosis* is a term applied to a livid purplish hue of the cutaneous surface, which is found to accompany some organic and congenital disturbances in the central organ of the circulation, of a more

intense character than the slaty tinge which the complexion is very frequently observed to assume in acquired disease of the heart. It was formerly attributed, on theoretical grounds solely, to one lesion, a permanent patency of the foramen ovale: and although this frequently gives rise to the affection, by allowing an intermixture between the blood of the two sides of the organ, and causing it to be circulated through the system without having undergone the purifying process to which it ought to be subjected in the lungs, it is satisfactorily demonstrated both that the foramen ovale may remain open to a considerable degree through life without inducing any serious disturbance of the circulation, and on the other hand, that various other irregularities in the heart may give rise to cyanosis."

The following observations upon the term hydrocephalus are appropriate to the modern view of the disease:—

" Much confusion has arisen from the misapplication of the term *hydrocephalus*, as it has been used to designate a variety of diseases, simply on account of their resembling one another in a comparatively accidental feature; and we would therefore follow in the steps of those authors who limit the term to the dropsical effusion of serous fluid within the cranium, unaccompanied by marked symptoms of inflammatory action during life. We have already seen that an accumulation of serum beneath the arachnoid or within the ventricles is a common feature in both acute and chronic meningitis; and though an affection of serious import, we have abundant evidence of the value of therapeutic proceeding in arresting and completely removing the disease and all its effects. Not so with what is commonly called chronic hydrocephalus, or what ought exclusively to receive the name of hydrocephalus. While certain forms of meningitis should designate the disease acute hydrocephalus, nothing is more liable to mislead the student, or perpetuate error, than a want of precision in our nomenclature.

" We must never forget that the effusion of serum is only a product of morbid action, and that inflammation, mechanical obstruction, anemic blood-poisoning, scrofulous cachexia, diseased conditions essentially differing from one another, may each of them give rise to a secretion of fluid into serous cavities.

" It is erroneous, and likely to lead to the most injurious practice, if we apply a name to a system by which it becomes identified with the most opposite diseases."

These few extracts present an average example of the manner Dr. Sieveking employs in discussing any disputed point. It is a combination of the argumentative, didactic, and suggestive, and is frequently interwoven with allusions to authority or personal experience.

In the compass of a Manual such as this, it was manifestly

altogether impossible to touch upon every new fact, or to give such prominence to the more important as would be necessary in a monograph; the wonder is here, however, rather that so much has been given as we find accumulated under each division. The work, in consequence of the very limitation to which we have referred, is scarcely sufficiently appropriate as a text-book for students. It seems to us, for a time at least, to be more adapted for the scientific practitioner. We say *for a time*, because, in the general absence of collegiate courses on Pathological Anatomy, and so long as its study is not stately required by the medical Examining Boards, so long will the student neglect this branch. With pleasure have we noticed that in a few schools, both in this and the sister countries, its study has been encouraged to a considerable extent, and much trouble has been taken by Hospital Physicians and Surgeons to draw the attention of the pupil to the vast importance, in a clinical point of view, of cultivating a knowledge of the structural changes which disease leaves upon the frame. We see, indeed, the time rapidly approaching when that great waste which Latham so graphically speaks of in connexion with hospitals will no longer be mentioned to the discredit of the profession; when, in short, the bedside and the pathologist's theatre will become the principal fields for cultivation by our students; when all theories, and dicta, and ingenious speculations will succumb before the light and power of nature's own teaching, and when the data which she supplies in such copious profusion will form the sole basis for diagnosis and treatment, and the sole test of medical truths.

We notice a slight omission in this Manual with reference to an important tissue of the body, the *Skin*. We do not find any special notice of its morbid anatomy, further than what is mentioned in connexion with cancer, syphilis, vascular disease, and such like subjects, in the discussion of which the cutaneous tissues are incidentally mentioned; the omission is not, however, of very much importance, when we remember that we have for reference such able and complete works as those of Cazenave, Wilson, Neligan, &c.

In conclusion, we believe this volume, both from its moderate price and the excellence of its material, will be largely read by the advanced student and the junior practitioner. We believe that it will tend to render more popular than hitherto the important subject of which it treats, and that it will foster a spirit amongst the rising profession to adopt rational medicine as the principle and guide of practice; and if this be, even

to a limited extent, the result of this publication, the lover of medical science must award its able authors a high meed of praise.

The Diagnosis of Surgical Cancer. (The Liston Prize Essay for 1854.) By J. Z. LAURENCE. London: Churchill. 1855. 8vo, pp. 77.

As a general rule, prize essays should not be published. They are usually written, as it were, to order; they must necessarily fall in with the 'peculiar views—it may be the prejudices—of the adjudicators; the writers are, for the most part, very young men, who have neither extensive experience, nor practice in composition. Hence, if not deficient in material, they are confused in their arrangement, crude in their theories, and not unfrequently illogical in their conclusions. We must not be understood as condemning the practice of writing prize essays: it is a good practice, and one which conduces to the improvement of the writers, by extending their information on a given subject. Other advantages it has, no doubt, but they are all rather on the side of the writers than directly on that of the public.

The above essay strongly confirms us in this opinion. The author, with becoming modesty, calls it a crude production, and gives us to understand that the profession is indebted to Messrs. Quain's and Erichsen's advice for its publication. Surely these surgeons would have shown a truer kindness to Mr. Laurence if they had kept it back to be revised, and perhaps rewritten, at some future day. We have no wish to say anything to discourage our present author, or other young men, from a laudable pursuit of science; and in any remarks we feel compelled to make, we are actuated rather by a desire to aid and guide their efforts in a right direction.

The essay is entitled "The Diagnosis of Surgical Cancer." The title is not an index to its contents. Except some vague and scattered remarks, chiefly drawn from Velpeau's work on Diseases of the Breast, there is nothing on the subject of cancer in any of the organs. The first chapter of the essay treats of the pathology and symptomatology of cancer; the second, of its anatomy.

The first chapter commences with the following "definition," which we must confess we do not understand:—"Under the term 'malignant,' as applied to morbid growths, is to be understood a growth which is obviously but the local manifes-

tation of a diathesis, the tendency of which is to destroy life, either in virtue of its own local effects, or of that diathesis, or of both conjoined." This mysterious diathesis destroys life in virtue of itself, or of its own local effects, or of both! Surely this is only mystification, not definition. It is another melancholy result of the obstinate use of terms which do not suit the present state of science. These words, malignant and benign, are not definite; they do not give any idea of structure, and ought to be banished from the nomenclature used in the classification of tumours. The structure of morbid growths gives the only accurate and positive basis for their arrangement: many *benign* tumours are malignant in their course, and many malignant tumours never kill. Until terms strictly scientific are used, it will be vain to expect that accord between clinical and microscopic observers by which, alone, their labours will be made mutually available. Mr. Laurence, by grouping cancerous and canceroid growths together, under the head of malignant, renders his meaning obscure in more places than one: so vague, in fact, are his opinions, or rather his mode of giving expression to them, that, after an attentive perusal of his little book from beginning to end, we cannot make out whether he considers epithelial tumours to be cancers or not.

When considering the anatomy of cancer, he gives a description of the cancer-cell, without measurements, without any guides by which it may be known from epithelial or other cells, and without any reference to the action of chemical reagents upon it. He speaks of its fatty degeneration in a manner that leads us to suppose him ignorant of the difference between a cell in this condition and a granular exudation corpuscle. He notices, in addition to the cancer-cell, only the fibro-plastic cell and the myeloid corpuscle; and he winds up with the following proposition:—

"That there do exist cell-forms which it is difficult or impossible to refer either to the cancerous or fibro-plastic type exclusively; and, as a corollary, that the existence of such forms brings us to the conclusion that the two forms of cell cannot but be regarded as the extreme links of a chain of forms connected by intermediate stages."

Now, without stopping to show that the corollary does not follow from the proposition in logical sequence, it will be enough to say, that the fibro-plastic cell is not, in the opinion of microscopists, the typical cell of any kind of tumour. Various forms of cell, widely different, were at first classed under the head of fibro-plastic; such as the cells of recurrent fibroid

tumours, and others, in which no ingenuity could find a resemblance to cancer-cells. More careful observation has, however, long shown that the fibro-plastic cell, such as Mr. Laurence describes, is evidence of nothing but growth and organizing power in a tumour; the fact of its being found in plastic exudations, where no abnormal or heteromorphous growth can be suspected, is sufficient proof of this; so that we may dismiss this high-sounding conclusion which possesses as little meaning as the opening definition. It is advanced as a convenient theory by which to explain all anomalies; but how it would do so, even if proved, does not appear.

We conclude this notice of Mr. Laurence's essay by quoting from it two passages, in which we cordially concur:—

“Accurate conclusions can only be arrived at by investigating *all* the circumstances of the individual case. . . . I cannot help remarking, that notwithstanding the immense mass of microscopic observations of morbid products that we possess, their value is in a great degree depreciated by the indifferent acquaintance observers often display of the intimate structure of the natural tissues in which the growth has occurred.”

The Pathology of the Bronchio-Pulmonary Mucous Membrane.

By C. BLACK, M. D. Edinburgh: Sutherland and Knox. 1855. 8vo, Part II., pp. 102-155.

IN a former Number of our Journal we noticed, at considerable length, the very excellent and valuable additions which Dr. Black, by his microscopic researches, had afforded to our knowledge of thoracic disease. We are now again favoured with a continuation of his useful labours; and are glad to perceive that the same tone of thoughtful inquiry, which rendered his previous communication of much practical as well as theoretical value, is maintained throughout the pages of the present publication. The treatise before us purports to discuss the non-inflammatory diseases of the bronchio-pulmonary membrane, more particularly that one known as tubercular deposit in this structure; the origin and subsequent course of which Dr. Black considers to comprise three pathological conditions, which are recognised as follows:—

1. The stage of local predisposition.
2. The stage of deposition.
3. The stage of germination.

Dr. Black is of opinion that the evidences of the predisposition to tuberculous deposit in the bronchio-pulmonary mem-

brane rest in a deviation from the healthy standard of blood which the vessels of that structure contain, which, to the unaided sight, renders the membrane apparently more pulpy and of a deeper coloration than natural, while the microscope shows an increase in the diameter of the blood vessels, owing to the overplus of blood with which they are surcharged.

He suggests that the frequent invasion of the upper lobes of the lungs by tuberculosis is more probably due to their deficient mobility, as compared with that of the middle and lower lobes, during the respiratory movements, than to any elective affinity they may possess for the localization of tubercle. Dr. Black proceeds to point out the means by which the genesis of the vesicular murmur is accomplished, and states his opinion, that the apparently greater distance of the vesicular sound of the lung predisposed to tuberculosis is not owing to a diminution in the conducting power of the lung, but to the reduction, during each respiratory movement, in the quantity of inspired air, and to the partial want of that active resistance which is manifested by the fibrous tissue of the pulmonary cells at the very extreme of inspiration, when the genesis of the vesicular murmur is at its climax.

The author, in his observations respecting Professor Bennett's views of dyspepsia as a cause of phthisis, states, that "in all but exclusively referring tuberculosis to the derangement of the digestive functions, Dr. Bennett is more or less opposed to the experience of many observers, who have not unfrequently witnessed the deposition of pulmonary tubercle without its having been preceded by any dyspeptic symptom whatever." This opinion we strongly urged when, in our critical analysis of the Edinburgh Professor's book on this subject, we differed with him in many important practical considerations.

The section of Dr. Black's paper devoted to the investigation of the stage of deposition, manifests much patient and diligent study. The observations offered cannot fail to prove useful as a collateral aid in diagnosis. We confess, however, that when we come to form our differential diagnosis by the recognition of corpuscles varying in size from $\frac{1}{7500}$ th to $\frac{1}{2500}$ th of an inch in diameter, we are almost disposed to regard the microscope as a kind of *ignus fatuus*, which lures men from the fair fields of practical science to the slippery quagmires of speculative theory. This tendency, though occasionally visible through Dr. Black's paper,—as when he again leads us to seek for isolated exudation cells from $\frac{1}{7500}$ th to $\frac{1}{2500}$ th of an inch in diameter,—is not sufficient to warp his excellent judgment

in a fair estimate of the appearances he sets forth with such extreme minuteness, since we thus read:—

“ An examination of the sputum, from time to time, can better determine the real progress of the disease than the most delicate auscultatory examination. When, however, the two modes of examination are combined,—*which ought always to be the case*,—the diagnosis is rendered certain; whilst the prognosis, which is the legitimate deduction of knowledge obtained by such a combination, is far more likely to be realized than that which is based on auscultation or microscopic examination alone.”

We have italicized a sentence in the above, as expressing our opinion on this matter. Writing in such a spirit, we need scarcely say, lends a very great practical value to the appearances set forth by Dr. Black as a further means to the recognition of the character and progress of pulmonary disease. This true estimate of microscopic appearances is by the author expressed as follows:—

“ The comparison, therefore, plainly shows that there is *no diagnostic cell* of tubercle. It were, consequently, a misnomer to designate any cell by the epithet ‘tubercle-corpuscle.’ When, however, an exudation consists essentially of irregularly-shaped cells, mingled with numerous molecules and granules, we may safely pronounce it to be of deficient vitality; but collateral circumstances must assist in determining the question of its tuberculous or non-tuberculous origin. It may or may not be tuberculous in its nature; the *microscope alone* cannot determine the question; a full investigation of the case in all its bearings is absolutely necessary for a correct interpretation of the physical appearances of the exudation.”

We have, in our review of Bennett on Tuberculosis, expressed our sentiments fully on this point. We are happy again to find that our opinions are so fully borne out by the close observation and greater experience in investigations of this nature which Dr. Black’s paper bespeaks him to possess.

Dr. Black, in his observations on the nature and special pathology of pulmonary tubercle, amongst many valuable remarks affords a complete refutation of Professor Bennett’s views on the subject. We find our previous opinions even more forcibly echoed. Thus, Dr. Bennett, when speaking of the existence of an excess of acidity in the alimentary canal as a predisposing cause of phthisis, by rendering the albuminous constituents of the food easily soluble, is regarded by Dr. Black as advancing theories which are untenable. Dr. Black writes:—

“ But even granting the invariable existence of the acidity of the alimentary canal, what proof does Dr. Bennett advance that the acid

in question dissolves albumen? None; nor can he bring any such proof to the point at issue. He does not state what acid produces the alleged excess of acidity of the alimentary canal; but it is presumed, from the nature of things, that the acetic acid is the one intended. Acetic acid, however, does not dissolve albumen, but, on the contrary, coagulates it,—a fact announced by me in the first part of this work, but preceded, as I have since ascertained, by a similar statement from Lieberkühn and Parkes. The objection which is thus offered to the theory of Dr. Bennett, and which is manifestly fatal to such a theory, is consequently supported by the authorities just named."

Professor Bennett's views respecting the formation of "tubercle-corpuscles" as being due to a deficiency "in the necessary proportion of fatty matter" in the exudation, in consequence of which "elementary molecules are not formed so as to constitute nuclei capable of further development into cells, therefore remain abortive, and constitute tubercle-corpuscles," are by Dr. Black objected to on the ground that no proof is advanced to show that there is a relative deficiency of fat as compared with the albuminous portion of a tuberculous exudation; while the analyses of Dr. Glover demonstrate that in tuberculosis the fats of the blood are not deficient, and that "tubercle itself often contains a considerable quantity of fat." Having adduced several convincing arguments in support of his views, Dr. Black concludes:—

"Hence Dr. Glover's argument against the theory, that 'tubercle-corpuscles' result from a 'deficiency in the necessary proportion of fatty matter in the exudation,' remains in full force, and Dr. Bennett's theory must necessarily be considered, as at present, unsubstantiated by fact."

Dr. Black recognises three stages to which the indications for treatment in tuberculosis have reference:—1. That of local predisposition; 2. That of deposition; 3. That of germination of the tubercle. In reference to these we may observe that the practical suggestions which Dr. Black offers, and the rational treatment he proposes, argue a thorough acquaintance with the truths of practical medicine, which leads us, without hesitation, to recommend this continuation of his valuable essay to the very favourable consideration of the profession.

In the first of these stages, or that of local predisposition, in which the bloodvessels are more or less engorged with blood, we read that the object of the physician should be "to restore the natural diameter of the affected capillaries, and thus to prevent exudation."

The obscurity of this stage of the disease rests in the fact

that the physician is seldom sufficiently early in attendance for its recognition. When recognised, the activity of the treatment must be commensurate with the extent of the local predisposition, and the suddenness and urgency of the symptoms, general bleeding being seldom, if ever, required, but local bleeding proving in many instances extremely beneficial. The importance of this method of treatment is well illustrated by Dr. Stokes, in his work on "Diseases of the Chest." We quote from the author as follows:—

"After the application of leeches, extensive counter-irritation of the chest should be practised, with the view of determining from the engorged lungs to the surface of the body. A quick effect must be produced; therefore, dry cupping, mustard poultices, liquor ammoniae, or hot turpentine, may be first applied; after which blisters, followed by the croton-oil liniment, or tartar-emetic ointment, will be used with advantage. A brisk purgative, exhibited contemporaneously with the adoption of the above remedies, will, in many such instances, be necessary; and in all cases the action of the skin should be promoted by very small doses ($\frac{1}{16}$ th of a grain) of tartar emetic, and by warm clothing. Perfect quiet of the voice, and a moderate temperature (60° Fahr.) will also contribute to the end desired."

The foregoing directions, in their application to particular cases, are worthy of consideration. Where a known predisposition exists, all bronchitic attacks are of immense importance. It becomes a trial of skill on the part of the physician to produce a divergence from the lungs of the constitutional irritation, while, at the same time, every effort is made to remove the condition producing it. Those who have had experience in the treatment of phthisical patients—and we may ask what physician is there who has not had such?—must know the painful anxiety attendant on the irritative cough, which, coming deep from the chest, proclaims the lurking foe. It is a happy fact that we have so thrown aside routinism in the treatment of this affection, that great principles now guide us in the application of remedies, and, above all, that such dogmatism as those advocating special organic changes would advance gives way before the practical observation of the effects of treatment. We discussed this matter in a previous review on works specially treating of this disease.

"In the second stage of the disease, namely, that of deposition, the indications are:—

- "1. To prevent further deposit.
- "2. To promote the absorption of that which has already taken place.
- "3. To treat special symptoms."

To fulfil the first of these indications, Dr. Black advises the employment of extensive counter-irritation of the chest; in acute pulmonary tuberculosis, by a succession of blisters; in the chronic, by the tartar-emetic ointment or croton oil liniment. The employment of tartar-emetic ointment freely applied to the chest is especially advocated in those cases which are of an intermediate character between acute and chronic. The pustules which result being a long time in healing seem, in his opinion (from which, however, we altogether dissent), to exert a powerful influence in preventing further exudation into the tissue of the lung.

For the treatment of the stage of deposition, the administration of cod-liver oil is particularly advocated as combining in its special efforts both the action of a food and of a medicine. The fact is impressed that, though the most valuable of any of our single remedies, *it is not admissible in every case of phthisis*. In the chronic form of phthisis, in which there is considerable emaciation of the body, unattended with a hot and dry skin, red tongue, and thirst, there is no remedy of equal value; whilst in cases in which considerable sympathetic fever exists, there are few, if any, remedies whose exhibition hurries on the disease more rapidly. "The golden rule for its exhibition involves the following conditions:—*Emaciation, little or no thirst, cool skin, and no disposition to sympathetic fever.*" That is to say, in those conditions of the system which permit its assimilation: Dr. Black remarks:—

"It may be given at first in doses of one or two teaspoonfuls twice a day; and as the stomach becomes more accustomed to it, the quantity may be increased to one, two, or even three tablespoonfuls, repeated three times a day. Beyond this last-mentioned quantity it is scarcely ever necessary to go. It is best tolerated *immediately after a meal*, with which it mingles in the stomach, and is, in consequence, gradually submitted to the action of that organ."

We afford this quotation, not for its novelty, for we know our readers were well informed on such a point, but that they may be the more fully impressed with the great medical truth that the same remedy, according to the circumstances of its administration, may, in the treatment of the same disease be equally an instrument of much good, or of great evil.

In the stage of germination, the indications of treatment are: 1. To prevent the formation of caverns. 2. To heal pulmonary excavations where they already exist. 3. To treat special symptoms.

Notes on some of the Developmental and Functional Relations of certain portions of the Cranium. Selected by FREDERICK WILLIAM PAVEY, M. D., London, from the Lectures delivered at "Guy's Hospital" by JOHN HILTON, F. R. S. London: Churchill. 1855. 8vo, pp. 93. With Illustrations.

IT is with feelings of great satisfaction that we undertake the task of reviewing Mr. Hilton's lectures; and we cannot refrain from extending our approbation to the editor for the perspicuity which guided the selection of those particular subjects, that, from their nature, permitted the teacher, presuming on the part of his auditory a certain acquaintance with elementary anatomy, to indulge in observations of a reflective tendency, to the exclusion of more rudimentary instruction;—a course which lecturers, under ordinary circumstances, must of necessity avoid, in consequence of the mixed nature of their class as to information, lest their doctrine might be unintelligible to one-half at least of an auditory whom they are bound to instruct according to their individual and not collective capacities. And herein lie the difficulties necessarily attached to the office of a lecturer, which constrain him, for obvious reasons, and guided by the best intentions, to maintain his observations only on the level of the junior students; for, should he forget the characters special to his auditory, a serious diminution of attention rapidly reminds him of the lapse, and warns him to avoid the dangerous experiment of seeking to sustain a standard of equality that, according to the existing organization of our medical schools, can never be attained. The fault, if it may be called so, does not depend on the teacher, but is unavoidably associated with a system, the imperfections of which must be manifest, even to those who have neither the *interest* nor *leisure* to analyze a subject fraught with the most cogent interests of our profession, involving the training of those on whom the onus of sustaining and extending the dominion of our science must devolve at no very distant period. But if these patent imperfections are admitted to exist in connexion with teaching, it would seem an unaccountable anomaly that colleges and public bodies, assuming and exercising a presidency over our institutions, should not seek to apply a remedy calculated to insure as close an approximation to perfection as possible. It is sufficient to remark, that the constitution of the executive of such controlling powers renders their attempts, although actuated by the best motives, perfectly inoperative to achieve those requisite alterations in educational policy implied by the term "approximative perfection." We wish not to be misunderstood, or rendered, through

our preceding observations, liable to the accusation that we declaim against a theoretical imperfection, which practically involves neither injury to the student, nor disadvantage to the lecturer: and this, too, as members of a school which stands paramount and almost unequalled for the signal benefits which it has conferred on the practical department of our art. In order to remove this misconception, we need only remark, that clinical and demonstrative teaching, as pursued in this, and we have no reason to doubt in other countries, not only meets with our unqualified approbation, but seems the type of that perfection which we desire; and we recognise in the late Professor Graves one of the greatest benefactors to our science, for having carried to full maturity the system of practical instruction at present pursued in this city, which has conferred on our school a universal reputation. Still, our firm belief remains unaltered, that lectures delivered in the theatres of our schools ought rather to be reflective commentaries, than partake only of the character of rudimentary instruction. The first constitutes the unwritten history of disease, and those collateral sciences involved by its knowledge, requiring for its mature and perfect elimination the highest exercise of intellect. The second implies but the existence of the single faculty, "memory," which, while it fails to elevate the mind of the teacher, degrades him to the level of an articulating class-book.

To no one branch of teaching may these observations be applied with more justice than to anatomical lectures. Our dissecting-rooms are absolutely incapable of further improvement as regards demonstrations of the human body, or the science of anatomical facts. But in our theatres, where a sessional course only occupies about one hundred lectures, that a large portion of it should be sacrificed to elementary instruction in osteology, myology, &c., whilst so much which practically lies beyond the reach of the student really claims the attention and labours of an accomplished teacher, seems to us an anomaly in the policy of education which the courage of some one teacher, straying from the beaten track, impressed by the feet of his remote ancestry, is destined to remove at, we trust, no very distant period. The subject of the course ought only to form the text on which the lecturer should expatiate, and whilst recognising the utility of a class-book, his observations and instructions should commence where it terminates; and instead of following its course, he ought always to essay an elevation of thought and ideas beyond the written testimony of authors, and seek at least to be suggestive where he cannot accomplish originality.

The small work before us fulfils the latter observation, showing how susceptible a subject may be of interest when treated as a reflective study, avoiding those unnecessary descriptive details which are painfully reiterated in ordinary lectures. In fact, a full course, carried out after such a model, would, we conceive, satisfy the most fastidious disposition. But the very title of the work, " Selections from the Lectures," warns us that we must not judge too leniently of the mass from the examination of a fragment, and leads us to assume that our preceding strictures will not fall without effect even on a lecturer so distinguished as Mr. Hilton has proved himself to be in the field of Anatomy and Physiology.

The work treats of many subjects connected with the contour and arrangement of the salient features of the human cranium, or the mutual associations subsisting between anatomical conformation and pre-ordained functions. Alluding to the difficulty of stating, with exactitude and precision, the number of osseous pieces constituting the skull and face, arising from the transitional fusion continually accruing in the progress towards maturity, he bases on these views an examination of the " Crano-facial bone" in its entirety, preferring an uninterrupted description of the mass to the more complex, but certainly not more useful, demonstration of those isolated pieces entering into its composition; still, he does not fail to recognise the beauty and harmony of design evidenced by the crowding together of separate and numerous ossific centres as radii of development, for this important element of the system;—these, existing in their greatest number during the nascent condition of the brain, corresponding exactly with its period of most rapid growth, and again disappearing by consolidation as the organ approaches its maturity, the law, of necessity, becoming altered with circumstances, and the demand for security answered by the fusion of the isolated centres into a single case.

" That the true object of the great number of isolated portions or centres of bone observed in the foetal skull, is to produce a rapid extension of the cranial capacity contemporaneously with the growth of the brain at this period, is fully confirmed by the appearances presented by the cranium in cases of hydrocephalus. In these unfortunate subjects there is a demand for a greatly abnormal and comparatively rapid expansion of the cranial cavity, which, in a considerable measure, is effected by the large development of numerous islets or insulated masses of bone, known as ossa Wormiana. Each of these, growing from its own centre, produces such a rapid extension of surface that, until consolidation takes place, the cranium is adapted to the rapidly increasing bulk of its contents."

Fully appreciating the foregoing remark, in relation to a morbid condition inducing local effects, as serving to illustrate a physiological postulate, we have been accustomed to advance in the same direction, but yet maintaining a similarity of object. Scrofulous children, even independent of visceral accumulation, are slow to close the sutures and fontanelles, not through any local fault, but rather in consequence of a low nutritive tendency; representing a condition to which the term "physical immaturity" may with propriety be applied. The terms of childhood, boyhood, adolescence, and manhood, are protracted far beyond their usual periods, and the functions and sentiments usually associated with the latter remain latent, often for years, beyond the usual time of their accession under more favourable circumstances. The mental faculties, though acute, are never powerful; fixity of ideas and resulting purpose are long protracted in their manifestation, circumstances which we doubt not are attributable to the participation of the brain in the general state of physical immaturity; and the patency of the sutures coincides with the design to permit of the gradual, but extremely slow, development of an organ on which depends wholly man's position and ascendancy.

The author details most elaborately the anatomy and varieties of the frontal sinuses, treating fully of their development and formation in relation to the neighbouring bones of the skull and face. He says,

"On examining different specimens of adult crania, the extreme diversity or irregularity observed with regard to these sinuses constitutes an exceedingly curious and striking object of consideration. Sometimes they are altogether absent; occasionally there is but one solitary cell; oftentimes there is a single small cell on each side; whilst at other times they form fair-sized cavities: in some instances symmetrically disposed on two sides of the median line, but more often exceedingly irregular both in outline and dimensions. They are sometimes so largely developed as to extend upwards for nearly the whole distance of the forehead, and likewise backwards, for an inch, or even more, along the horizontal plates constituting the arches of the orbits."

Again, on the mode of their production, the author offers this explanation, based upon anatomical reasoning:—

"As I have already stated, they do not appear until after a much later period of life than is generally allowed. Before the commencement of their development, the two plates or tables of bone, which constitute the inner and outer surfaces of the cranial case, are placed in close apposition to each other; but the outer

plate being now pushed forwards—in a manner I shall directly point out—by the central lamella of the ethmoid, under the influence of the development of the sphenoid, and the inner plate retaining its original position in relation with the crista galli and crebriform plate of the ethmoid, the intermediate structure or diploë is extended into cells or cavities, varying in size according to the extent to which this process has advanced. I must needs, for further explanation, anticipate a little of what I shall hereafter have to say concerning the development of the sphenoid. The final completion of this bone does not take place until after the completion or development of the remainder of the cranial bones; and wedged in, therefore, as it is into the immediate centre of the cranial base, its progressive growth or expansion produces vast and important changes in most of the surrounding parts. The body or centre of the bone is, in early life, solid, and comparatively small in size, but it afterwards becomes hollowed out into cells, which, like the frontal sinuses, form accessory cavities to the organ of smell. With this development of the sphenoidal cells, the body of the sphenoid is proportionately increased in dimensions; and the rostrum—a process of bone projecting from its inferior surface—is also proportionately advanced. Now, this rostrum fitting firmly into the vomer, necessarily ploughs onwards this bone, which, advancing in a direction downwards and forwards, likewise carries before it the horizontal or palate plates of the superior maxillary bones, to which its inferior edge is articulated, and thus materially increases the vertical extent of the nasal cavities. In the meanwhile, also, the vomer, in its progression, pushes forwards the central lamella of the ethmoid, which, in its turn, advances the nasal bones, and likewise the anterior table of the frontal to which they are connected, so as in this way to lead to the formation of the frontal sinuses at one and the same time, and by precisely the same primary cause, by which the nose is rendered more prominent, the nasal cavities more capacious, and the whole more efficient as an olfactory organ.”

There is scarcely any one portion of the skull more subject to variability of dimensions than the body of the sphenoid, which accounts fully for the absence of the frontal sinuses in some cases, as well as the small perpendicular extent of the nasal fossæ. But cases do occur where this bone presents its natural and even augmented volume, associated with a short superior maxillary, and excessively small frontal sinuses. Such an example lies at present before us. It is a specimen of a true Celtic cranium, with a shallow sinciput, wide malars, and remarkably short naso-frontal pillars to the superior maxillary, with only a slight appearance of the frontal sinuses. Still, notwithstanding this configuration, the antero-posterior extent of the sella turcica is beyond its usual diameter, which at first appeared almost inexplicable, but on further examination we

found the foramen magnum of the occipital bone thrown so far back as almost to occupy the position normal to the quadrumanæ; a circumstance which leads us to entertain the opinion that the body of the sphenoid may grow backwards instead of forwards, thus influencing the occipital rather than the nasal fossæ; in fact, the growth of the anterior wall of the body of the sphenoid only can influence the ethmoid and maxillaries; and that this wall frequently remains persistently applied to the posterior, causing an absence of the sphenoidal sinuses, is abundantly manifest from the indiscriminate examination of various skulls.

But still, there is another question involved by the author's admission of the absence or variations of the frontal sinuses, which he has not attempted to answer. Why are these sinuses absent, even in cases where an external elevation would lead us to infer their full and perfect integrity? The following seems to afford an explanation of the circumstance:—The nasal process of the frontal bone, in the great majority of specimens which we have examined, is formed only of the external table; but we have seen, incidentally, a specimen in which it consisted, evidently, of the prolonged spine of the internal as well as the external plate of bone, rendering the equal advance of both contingent on the increase of the sphenoidal body, and preventing the development of the cells arising from the separation of the tables.

The author, estimating the olfactive sense as one of the instinctive faculties, subordinate to animal desire and gratification, conceives the nasal organ, in savage races, to attain its acme of development; and adduces, as proofs of the supposition, that in the African the frontal sinuses "are enormously developed." We are not disposed to generalize exactly to this extent, as we believe the perfection and intensity of appreciation of odorous particles depend more on the peculiar temperament than on absolute extent of the cavity; and this we state, fully conversant with the light which comparative anatomy throws on the subject, apparently supporting the author's views and opinions, at least in the carnivora, in whom the great width of the nose is proverbial, depending on the size of the naso-frontal pillar of the superior maxillary bone. But these seem rather to stand in relation to the enormous laniaries which are imbedded in them, than to assist in any material degree the nasal organ.

It is a fact well known to anatomists, that in the flat bones of the cranium there exist numerous foramina, differing in size, but still perfectly distinct: one set are so minute that a

proper idea of their number can only be attained by examining a growing parietal with a glass of an inch focus; the whole surface will seem a mass of apertures, each having a well-marked margin. The second form are quite visible to the naked eye; such are the parietal, mastoid, nasal, &c.; all these principally, but not wholly, transmit veins which slowly become obliterated as ossification is completed. These have not escaped Mr. Hilton's observation; as safety-valves to the venous circulation within the cranium, and their prevalence in childhood, he correctly attributes, first, to the more active circulation requisite during the growth of the brain; and, secondly, as a security against that congestion which would likely, under other circumstances, ensue during prolonged fits of crying or passionate expirations, so frequent before the instinctive impulses are controlled by reason and reflection.

Entering still more into detail on this subject, he remarks:—

“ There is a tendency, which is not only prevalent amongst students, but even amongst others, to ascribe to the internal jugular veins a more important part than they really perform, or to attribute to them a greater share in the return of the venous blood from the brain than they really take, and to regard in a less important way than they really deserve those accessory streams which escape in various points through the osseous walls of the skull. Not only do these accessory streams convey from the brain a considerable portion of its venous blood under the normal, but also under the abnormal conditions of life; for when there exists a temporary venous obstruction in the lungs or heart, they constitute the chief and almost the only means of escape of venous blood from within the cranial cavity. If, for example, from a voluntary effort, or from some other cause, the process of respiration be for a short time arrested, we know, as a matter of observation, that the eyes start, and the face becomes exceedingly red and turgid. The temporary cessation of the respiratory action having produced a stagnation of blood in the capillaries of the lungs, the right auricle and the whole venous circulation obstructed,—the first effects of this obstruction in the lungs and at the right side of the heart being thrown on the larger vessels, in most immediate relation with the right auricle, the circulation in the jugulars becomes early impeded, and the cerebral organ is, for a time, relieved of its venous blood, almost entirely through the medium of those smaller veins (amongst which the ophthalmic hold an especially conspicuous position), escaping through various parts of the cranial parietes to the exterior of the head. These veins being placed at a distance from, and, therefore, in much less direct communication with the heart than the jugulars, are less influenced by a temporary engorgement of the right auricle; and admitting as they do, from the distensible nature of their thin coats, and from the laxity of the surrounding tissues in which they ramify, of con-

siderable dilatation, they are capable, for a limited period, of responding to the increased function thrown upon them, and of giving exit to the blood from the interior of the cranium,—a circumstance that accounts for the well known appearances observed under such conditions."

Moreover, in addition to the foregoing compensating arrangement, the author further insists on the alternating states of the vascular system and the sub-arachnoid fluid, adducing the following experiments as proofs of the position which he assumes; and this amounts to the following statement, that during vascular engorgement of the brain a portion of the sub-arachnoid fluid escapes from the cranial cavity into the spinal canal, and on the subsidence of the repletion it returns again to its original site.

"In the first experiment I opened the abdomen of a subject on the post-mortem table, and, clearing aside the viscera, removed the bodies of a couple of the lumbar vertebrae, so as to expose the dura mater containing cerebro-spinal fluid. I then forced blood into the interior of the head, by making pressure below upwards along the course of the internal jugular veins; and as I did this the dura mater in the lumbar region was seen to rise from the afflux of cerebro-spinal fluid into the spinal canal. In the other experiment I removed the whole of the viscera from the chest and abdomen of the same subject, without disturbing the head. The blood in the divided branches of the azygos, lumbar, and intercostal veins, formed, as it were, cup-shaped depressions; but immediately that I applied pressure with the fingers upon the dura mater exposed in the lumbar region, the blood rose, and, finally, flowed out of the above-mentioned venous branches; just in proportion, in fact, as pressure was made on the dura mater, so was blood forced out from the azygos, lumbar, and intercostal veins."

These experiments seem to be conclusive, and by their results are calculated to settle "a vexed question," on which physiologists have expended arguments rather than direct observation. What practical utility will yet arise from Mr. Hilton's facts we cannot at present predicate; but it is only just to adopt the inference that, in proportion as they become known and acknowledged, so will they become capable of utilization in connexion with pathology and therapeutics.

It is an anatomical fact that, with the exception of the undulations of the orbital plates of the *os frontis*, the elevations of the vault of the cranium, together with the intervening depressions, do not correspond in figure or outline with the convolutions and anfractuosities of the brain, the greatest difference being observable in the middle and posterior divisions of the

base, these ridges or elevations seeming to pursue rather a systematic course and direction, at least in some portions of the internal aspect of the skull. The author has observed, that these ridges in the anterior part of the skull pursue a converging course towards the *alæ minores* of the sphenoid, and thus are conducted to the anterior clinoid processes; whilst similar ribs, in the middle and posterior portions, run towards the petrous portions of the temporal bones. Assuming these to be the thickest portions of the cranium, which they are undoubtedly, they necessarily become the conductors of those vibrations resulting from the concussions to which the head is so liable, even under the most favourable circumstances, determining them on the anterior clinoid process, where, in consequence of these points being at a distance from the brain, and bathed in fluid, they are broken and dispersed with impunity to the soft and yielding cerebral structure, or transmitted to the petrous portions of the temporal bones; they are broken up or diminished in intensity by the membranous tissue uniting these bones with the body of the sphenoid. The observance of the law of necessity is beautifully exemplified in this respect, for if we examine the vitreous table of the foetal, or, indeed, of the infantile skull, the surface is represented as perfectly smooth, and of equal thickness at all points; all necessity for special vibration conductors is absent, as the cranium then consists of many isolated portions united by membranous material, each individual bone becoming the excentric source of those vibrations communicated to any part of its surface, and being thus determined towards its edge, are broken up by the connecting membranes.

The author combats the doctrines of phrenology at some length, adducing many anatomical objections to prove the fallacies on which it is based. This is so fairly accomplished, and with so little evidence of any desire to obtain a triumph over the believers in the existence of this misnamed science, that the most enthusiastic cranioscopist, though he may dissent from Mr. Hilton's views, cannot, with the most remote claim to propriety, accuse him of prejudice in judgment or assumption in argument. We may state those objections briefly:—First, there exists an admitted and demonstrable discordance between the cerebral surface and the cranial parietes. Secondly, the whole base of the brain is excluded from the inquiry, although its structure is similar to the summit. Thirdly, allowing the gray matter to be the seat of intellect, no cognizance is taken of those masses which lie within the substance of the organ. Fourthly, it is impossible to estimate, by any external measurement, the actual size or weight of the cerebellum. And fifthly,

the posterior part of the hemispheres is assumed to be the seat of the animal propensities; whilst their progressive development in the animal series most undoubtedly associates them with the highest order of intelligence and mental perfection.

Concussions communicated to the condyles of the occipital bone are conducted outwards by the jugular ridge to the petrous portions of the temporal bones, and thus produce the injury known to surgeons as fracture of the base of the skull. In connexion with this subject Mr. Hilton performed a simple experiment to determine the result of an injury applied to the condyles:—

“ Having fixed an ordinary skull on a firm support, with its vertex downwards and its base upwards, I placed a strong piece or bar of wood across the occipital condyles, and then, by means of a hammer, applied a stout blow as evenly as possible over its centre. The result of this, as I expected, was fracture through the petrous portion of the temporal, the line of fracture intersecting the *membrana tympani*. By the side of this experiment let us now place and take into consideration an example of an ordinary accident of the description I have referred to. Suppose, as often happens, that a bricklayer’s labourer, falling from a scaffolding on the top of his head, sustains a fracture of the cranial base that intersects the petrous portion of the temporal bones, and lacerates the *membrana tympani*—what here takes place is this: on falling on the top of the head the body comes with considerable force or violence against the occipital condyle, and the vibrations thus generated—just as in the experiment where the blow was artificially applied—being conducted by the dense ridge of bone to the jugular processes, are thence communicated to the petrous bone at the point where it is joined or united to the occipital. It is from this point of union between the jugular process of the occipital and the petrous portion of the temporal that the fracture starts; and pursuing the direction in which the vibrations are travelling, it usually intersects and ruptures the *membrana tympani*; a circumstance which accounts for the escape of blood and cerebro-spinal fluid that so often takes place from the external ear in accidents of this nature.”

We believe that attention was first drawn to the issue of a serous fluid from the meatus auditorius externus in fractures involving the base of the skull by the late distinguished surgeon to Steevens’ Hospital, Abraham Colles, who described it as the rising up of a limpid serum in the meatus, which did not flow over, but returned rapidly, on being removed by a sponge, to its former condition (we quote from memory). Since his description many new facts have been added in the form of suppositions as to the source of this fluid; but not a single attempt has been made to impair or invalidate the diagnostic

value attached to its presence by the late Professor, whose observations, founded upon close clinical application and judicious reasoning, stand beyond the reach of criticism, constituting, in fact, the landmarks of sound surgery. However, there are some points in association with this pathological sign more than interesting to the physiological investigator, on which we may reflect with advantage. First, does it always occur in this particular form of fracture? and secondly, may it be present even independent of that lesion? In relation to the first subject of inquiry, we may state that we have seen many fractures of the cranial base exhibiting the greatest variety as to their trajet. They may occur through the petrous portions of both temporals, in the immediate site of the tympanum, a position naturally weak, and possessing little power of resistance. Again, associated with the former, a transverse fracture of the basilar process of the occipital may and often does occur, or the fracture of the petrous portions may take place much nearer to their apices, the transverse uniting fracture passing through the sella turcica; and lastly, a vertical fissure may extend from the latter down to the foramen magnum. From these remarks it will be obvious that unless the fracture traverses the tympanum, producing a communication between the external surface and the subarachnoid space, the peculiar phenomenon referrible to the ear must be absent of necessity; and other signs, deduced from an examination of the nose and pharynx, must now be relied on by the surgeon. This form of accident is conceived to be invariably fatal; nevertheless, we have seen a case where the cranium was subjected to severe pressure, presenting, with the symptoms of ordinary coma, a continued welling of this limpid serum from the ear; and under the influence of judicious treatment the patient perfectly recovered, and exhibited no ulterior signs that could lead to the inference of the previous occurrence of an injury involving such grave consequences as fracture of the base.

As to the source of this fluid, the author has so well and ably contrived a demonstrative experiment to prove its peculiar origin that we cannot withstand the temptation to transcribe it in his own words:—

“ Some years ago a boy, who had sustained a severe injury of the head, was admitted into one of the wards of Guy’s Hospital. He presented the ordinary symptoms of fractured base; and a small quantity of a thin, clear fluid was observed oozing out of one ear. It occurred to me that if this really consisted of cerebro-spinal fluid, it ought to escape in much larger quantity on artificially inducing venous congestion of the cerebral circulation; I, therefore, pressed

upon the jugulars, and with the other hand forcibly closed the patient's mouth and nose, so as to suspend the respiratory process for a short time, until, in fact, his face became red and turgid from venous congestion. As I had anticipated, in a very few moments the fluid began to flow much more rapidly from the external ear, so much so indeed that I was quickly enabled in this way to collect even half an ounce of it."

Mr. Hilton now selects the sphenoid bone as the foundation on which the integrity and expansion of the future cranium depend, as it is with its development become associated those changes in the anatomical elements which distinguish the infantile from the adult skull. The slightest and most casual reflection on the articulation and position of the body of the sphenoid will immediately display the important part it plays in connexion with expansion of the base, placed in mid-space between the occipital behind, temporals posteriorly and laterally, and the ethmoid and frontal in front, whilst below and before lie the facial bones, it represents a wedge, whose movement must, of necessity, be propagated to all these parts, augmenting and expanding not only the cranial fossæ, but also lengthening the face, and, contingent on this increase, altering those fossæ contained in this region. Thus the ethmoid and frontal are forced in a forward direction; the petrous portions of the temporals, backwards and outwards; and the superior maxillaries, with the vomer downwards and forwards: so that the nose, orbits, and autrum, are solely dependent on this cause for their augmentation of capacity.

We have much to regret that we are unable to notice further in detail the many valuable opinions of the author. To the reflective lecturer they contain much which is suggestive, if not absolutely new; and the student will obtain more profit by their perusal than the laboured study of a systematic class-book can possibly afford. For ourselves, we look forward with the greatest pleasure to a renewal of our association in some future publication with an author from the examination of whose writings we have obtained both pleasure and instruction.

Eutherapeia; or, an Examination of the Principles of Medical Science, with Researches in the Nervous System. By ROBERT GARNER, Surgeon to the North Staffordshire Infirmary, &c. London: Churchill. 1855. 8vo, pp. 282.

IN this work Mr. Garner has embodied a vast mass of facts in a small compass. He has reviewed not only the history, but

has given an epitome of the present state of anatomy, physiology, pathology, the *materia medica*, and the practice of medicine. The result of his labours is to impress the mind of the reader with a high conception (inadequate as it must ever be), of that prodigious mass of previously acquired knowledge, upon which the present edifice of medical science may be said to rest.

It is, however, to be observed, that while he has epitomized with great ability his copious store of materials under each of the above heads, still, he has incurred the risk of not fully satisfying any class of his readers. He has gone too deeply to be well understood by the non-medical reader, and he has sacrificed too much to him, by withholding from his pages those details and references to original experiments, which are necessary to satisfy the requirements of the professional reader. Thus, while the one will be likely to find it dry and uninteresting, the other, although acknowledging the merit of the learned author, will yet complain that he has not been sufficiently furnished with extracts from the original authorities. We present the following as a specimen of his manner of treating the subjects which pass in review before him:—

“ The blood may be termed an organized fluid, or *chair coulant*, as our neighbours have called it, containing all the elements of muscle and brain, fibrine, fat, phosphorus, &c. Its specific gravity is commonly about 1055, and its fibrine is almost at the point of coagulation, being only kept fluid by remaining in the vessels. It also contains a vast number of flattened globules floating in the serum, which appear to be as much organizations as the cells of the areolar tissue, and, like them, have commonly central nucleoles. On these corpuscles or discs the colour of the fluid depends. The coagulation of the blood, when drawn from the body, appears to be an act rather of a vital than of a chemical nature; and one proof of this would appear to be the vital operation of those causes which most influence it; chemical agents have less effect upon it than might be expected. When placed under the air-pump receiver, the coagulation and separation into clot and serum is somewhat retarded, but not prevented, carbonic acid is given off, and the colour is unaltered. Chloroform and hydrocyanic acid hasten the coagulation of venous blood, but prevent its separation, and appear neither to disorganize its globules, nor to change its colour. It is blackened, and remains fluid when potass or sulphuric acid is added; in the former case the globules are disorganized. With nitre the colour is brightened, the serum separates, but there is no solid clot, and the globules appear shrunk. Common salt, also, brightens it, and prevents coagulation. The separation of blood into the liquid serum, and a clot consisting of the fibrine and colouring matter, or globules (and modern chemistry draws a distinction between the two last), is a further process of coagulation. Iron is undoubtedly an essential ingredient in the

blood, but it is now denied that its colour depends upon that metal, as it has been separated without loss of colour; yet the chemists show that iron, as it is found in the blood, is peculiarly adapted to receive and part with oxygen, and the colour is evidently much influenced by that addition and subtraction. Sulphuretted hydrogen destroys this power in iron, and has an equally violent effect on blood, showing also that the oxygenation of the iron, and the bright coloration of the blood, are contemporaneous. The blood is alkaline in its nature, and owes this property, according to Liebig, principally to phosphates, and not to carbonates, which, however, exist there: these phosphates, from their affinity for carbonic acid, render the fluid well adapted to carry the latter from the different parts of the system to the lungs. Among other reasons for the alkalinity of the blood, the preservation of it in a fluid state is an important one."

"The carbonates of the blood may be formed from lactates, acetates, and tartrates, taken in with the food; they are considered to exist as carbonates, and not as bicarbonates, notwithstanding the presence of carbonic acid in the venous blood; they combine with superfluous acids, and pass by the kidneys as sulphates and phosphates; besides preserving the fluidity of the blood, they render its iron soluble, and also the tissues of the body more oxidizable. Though phosphates are present in the ash of the blood, it has been doubted by Rose whether they are not formed during incineration. The carbonates thus perform the office of carbon carriers above alluded to, which Rose, however, doubts in the herbivora. Phosphate of soda is the one of the serum, phosphate of potash that of muscle and of the blood clot; according to Liebig, the former only possesses the power in question, and it must be readily formed by double decomposition from the chloride of sodium in the serum, and the phosphate of potass in the clot or muscle."

"Many of the changes in the blood from disease will be alluded to hereafter. In scurvy the globules appear to be sometimes, but not always, affected as to form: but M. Becquerel and Mr. Busk deny that there is a deficiency of fibrine. In the land scurvy, now so prevalent, the blood when drawn appears thin, but when the clot is separated, it has appeared to constitute two-thirds of the bulk, and is tolerably firm, with sometimes a little buff; it is bright externally, but dark within. The incinerated ash procured from the serum gives much more saline matter than is, according to Lehman, yielded by healthy serum, consisting principally of chloride of sodium, with no carbonates. The clot is soluble in a solution of potass, not so in one of nitric acid."

He is inspired with a just indignation against the homœopaths and hydropaths, who at the present time represent the succession of various novelties which have sprung up like *fungi* on the heaps of excrementitious matter cast out from the interior of the temple of medical science, and with good reason has he closed his work with strictures on these opinions. We say, with

good reason, for a perusal of a few pages of the book is quite sufficient to prove that medicine is not, as some would endeavour to persuade the public, a system founded on authority, and supported by a confederacy of blind imitators. On the contrary, it is perpetually undergoing alterations and improvements. Medical books, which were considered standard twenty years ago, are now of little more value than so much waste paper. Those names which are still and ever must be held in the highest reverence, may remain permanently chronicled in the history of medicine, but the opinions belonging to most of them have been so shaken by fresh accumulations of experience, and so modified by observers coming on in succession, that few can be distinctly traced to their original authors. Our godlike art, deriving its origin from distinct sources in Chaldea, Egypt, and Greece, and receiving fresh accessions from all the quarters of the globe, claims both the veneration due to remote antiquity, and also has to boast of the charms of a perpetually renewing youth. No dogma is now held which has not stood the test of experience; no authority is able to shield an opinion from the perpetual stream of increasing research and improvement, which, clearing away the rubbish, purifies and manifests the truth. Thus, while medicine has been transmitted from one generation to another, the precious ore has been rendered still more splendid and valuable, while the dross has been constantly undergoing a process of comminution and decay.

True it is, the divine command has forbade man's efforts to be successful, so far as to enable him ever to arrive at the knowledge of the tree of life, but still the art of medicine has, under the divine sanction and the divine blessing, been not only an assuager of pain, and undeniably an averter of many otherwise fatal diseases, but it has also taught innumerable improvements in the economy of society, and it has been proved that, in proportion as its influence has extended, the duration of human life has been prolonged, even in some cases (as ascertained by statistical tables), to double its previous amount.

And who are they who now assail medicine, if not by open attack, which would afford an immediate opportunity of exposing their ignorance and presumption, yet by setting up an unintelligible something in opposition to it? They are lovers of the paradoxical, often the *odd fish* who float on the surface of society, and are borne along by the prevailing currents (*περιφερόμενοι παντὶ ἀνέμῳ της ζεσταλίας*); but the best and most sincere of them are those who are carried away by that leading propensity in the human mind to believe in the existence of occult qualities, that same propensity which, in former

times, introduced magic, and the doctrine of signatures, and innumerable other errors into medicine, but which she has been able to get rid of by virtue of her inherent strength and vitality. With regard to the comparatively small number of those who, within the pale of the profession, have avowedly become homœopaths, we charitably wish to draw the veil. There are some men who never had the sense of smelling, and, perhaps, the minds of some have been so constituted as to believe that two and two make five and not four. We prefer any solution rather than that which would suppose them to act under the influence of corrupt motives, and which would view them as having abandoned their convictions and denied their art, with all its weight of evidence, for the sake of a little temporary gain, and thus *propter vitam, vivendi perdere causam*. But let us hear Mr. Garner on homœopathy:—

“ We do not think it contrary to nature to seek to cure disease by an open combat with it, by what Hanneman terms antagonistic measures. We apply cold to the hot head or skin in a phrensy or fever; a warm bath when the perspiration has been suppressed; we bleed in plethora or inflammation, and thus destroy the pabulum of disease; or in hemorrhage to take off, by mechanical means, the *vis a tergo*; we give an alkali by a chemical law, to neutralize the acid which may be proved to be present; purgatives in constipations; astringents in hemorrhage or diarrœa; kousso in tape-worm,—all wrong, according to Hanneman.

“ In fact, we adhere to no dogma: our remedies may be vital, chemical, or mechanical; specific, derivative, or counter-irritant; diverse enough, at any rate, to prove that we are less systematists than the homœopaths themselves; a point on which they attack us.”

“ According to Hanneman, all medicines must be directed solely to the symptoms, and must be of such a nature as to produce the same symptom in a healthy person. Hence we see why they find it necessary to confine themselves to the external or ultimate symptoms, for what drug will produce a hydrothorax or internal schirrus, or hydrocephalus? But without these morbid states or changes, their natural associations, functional symptoms, must be vague: a vomiting, for instance, even conjoined with headach, dyspepsia, and fever, may depend upon mischief either in the head, stomach, liver, or kidneys. And what is more, we affirm that there are no medicines known which, on the healthy individual, will be homœopathic, that is, produce the same, or similar disease. What medicine will produce a hooping-cough, or small-pox, or scrofula? Mercury, lead, arsenic, opium, quinine, strychnine, emetics, purgatives, or diuretics, though they produce effects violent enough, do not produce the exact symptoms of any disease. Were they ever supposed to do so before this new system existed?” &c.

“ In one respect, only, does there appear any truth in the doc-

trine: if a medicine shows the power of acting on some particular tissue or organ, as iodine and mercury on the glands, opium on the nerves, or ipecacuanha on the stomach; such medicines will affect those parts when diseased; this peculiarity of the medicines having been always understood."

"To ascertain the 'pure' effect of doses, or what he calls their pathogenic power, Hanneman experimented on himself and certain young men: the results, besides being indelicate, are, in our opinion, curious enough to rank amongst the strangest of the German vagaries. Arnica caused 355 symptoms; amongst others, vertigo, disturbance of mind, heat in the head and pain, heat of face, contorted pupils, vomiting, tormina, convulsions, eruptions, fissures of lips, diarrhoea, dysury, &c., and cough. What disease is this? Belladonna presented 685 symptoms; mercury nearly 1000^a; 720 symptoms have been produced by the millionth of a grain of animal charcoal; 190 by the same dose of vegetable ditto.

"This system of minute doses, to which allusion is here made, must have been intended by the high priest of homœopathy as the touchstone of his disciples' credulity. It is curious to see how the man who has ventured to disregard the labours and opinions of ages, should maintain his own infallibility in such a peremptory manner. He tells those whom he calls 'mongrels' of his school, that 'it will continue to hold good as a homœopathic-therapeutic maxim, not to be refuted by any experience in the world, that the best dose of the properly selected medicine is always the very smallest one of the high dynamizations.'"

Did he adopt this infinitesimal system out of regard for his race? or did he see in it a safe refuge for the consequences of his theory? For we may, with safety, dare the homœopaths to administer their medicines in ordinary doses; they dare not give a full dose of opium in coma, of brandy in phrenitis, of salts in dysentery, or emetic tartar in cholera.

"Hanneman chooses his medicines from their effects on healthy individuals; we, from their action on the disease which we attempt to cure. Is our plan the most senseless? Is it sure that the actions on medicines on the healthy body will continue the same when it is disturbed by a fever or inflammation? and, if changed, they are no longer homœopathic. We have seen strychnine fairly tried for thirty days on a patient, who somewhat presented the symptoms which the medicine causes, without the least effect; and M. Andral tried the effect of quinine on himself, without its producing the symptoms of intermittent fever; and the power of homœopathy on 130 or 140 hospital patients, in the presence of the homœopaths

^a Amongst others, itching of the internal angle of the left eye, itching in a wart on the finger, repugnance for butter, obstruction of the left nostril for an hour, speedy loss of appetite by eating.

themselves, without any good result. We have tried some of his medicines in full doses—*hyoscyamus* and *belladonna*, for instance—on the healthy individual; the symptoms have been such as are commonly described, vertigo and sleep—the effects of opium—with some dryness of the mouth; but not, as the homœopaths would have them, resembling those of *hydrophobia*."

"We might follow Hanneman through his list of mineral remedies, his statements being still more absurd. In no case does he give an epitome or statement of the principal symptoms produced by them on a healthy or sick person. One or two, only, of the many symptoms are brought forward, and those, probably, dependent upon idiosyncrasy; and from such circumstances the virtues of the medicines are accounted for. A copper coin, once swallowed accidentally, produced an epilepsy (very probably), and hence it (salts of copper, we suppose) cures chorea. Lead produces colic and constipation, and therefore these diseases may be cured by pills of metallic lead."

"But though ordinary medical philosophers may not speculate on the fundamental nature of disease, Hanneman may do so; and his vaunted theory of chronic disease is the splendid result. All chronic maladies, he says, arise from the uncured rankling in the system of these miasms, the syphilitic, syrosis, or the condylomatous and psora, or the itch disease! Perhaps we might not be disposed to dispute the first being a fertile cause of disease; the second, it must be admitted, constitutes a remarkable discovery, the syrosis or chin welk, probably from the irritation of the razor principally; and condylomata or warts, from local irritation, having never been considered of so poisonous a nature. But, in Hanneman's words: 'Incalculably greater and more important is the chronic miasm of itch, the only real fundamental cause and producer of all the other numerous, I may say innumerable, forms of disease.' He mentions nervous debility, hysteria, hypochondriasis, mania, melancholia, also epilepsy, caries, cancer, gout, jaundice, dropsy, asthma, deafness, catarrh, amaurosis, calculus, paralysis, and a host of others which we cannot enumerate. Is it possible that a medical man could bring his mind to believe all this? Certainly psora is an 'extremely ancient infecting agent;' or, as Trinculo says, 'a very ancient' and not of the newest disorder. Is this to continue the great, the sole discovery, for which we are indebted to the homœopathists?"

"If we add, in few words, that it is, perhaps, not certain that nitric acid will produce or cure salivation and ulceration of the mouth; still less so that potass will cause or cure tetanus; arsenic, cancer; or tin, phthisis; and that it is not proven that a bath of 100 degrees is good in the hot stage of the fever, or hot fomentations in cephalitis,—we have given an answer, we believe, to all the cases brought forward in the 'Organon' as proofs of the doctrine."

"And now for Hanneman's pharmacy. Two drops of the fresh vegetable juice (of a medicinal herb), mingled with equal parts of alcohol, are diluted with ninety-eight drops of alcohol, and potentized

by means of two successions, whereby the first development of power is formed, and this process is repeated through twenty-nine more phials, each of which is filled three-quarters full with ninety-nine drops of alcohol, and each succeeding phial is to be provided with one drop from the preceding one, and is, in its turn, twice shaken; at last the thirtieth development of power (potentized decillionth dilution^a) is obtained, which is the one most generally used. Powders are to be potentized by trituration, for three hours, up to the millionfold pulverulent attenuation; and of this one grain is to be dissolved, and brought to the thirtieth development of power, by means of twenty-seven attenuating phials, in the same manner as the vegetable juices."

"The above successions and triturations form an important part of Hanneman's pharmacy. Arguing against certain disciples who carried their physic in their pocket, and thereby dangerously potentized their drugs, he observes:—'I dissolved a grain of soda in an ounce of water, mixed with alcohol, in a phial which was thereby filled two-thirds full, and shook this solution continually for half an hour; and this was a dynamization and energy equal to the thirtieth development of power'"^b.

We believe that if Hanneman had been a native of England, and had, after arriving at years of discretion, published or spoken the nonsense we have now quoted, he would have been sent to an asylum. But he was a German, and his brethren are often glad to lay aside their meerschaum pipes to listen to anything new. In Paris, where he spent the latter years of his life, an absurdity so great that no one had ever thought of it before was a treat of the first order; and its being contradicted by all the previous experience of mankind made it peculiarly attractive to those who, to use the simile of Dr. Johnson, had grown tired of milking the cow, and now went out to milk the bull. In the meantime, the neat appearance of the globules, so methodically disposed in the *dear little* glass tubes, and the precise directions of the formularies, rendering medicine plain to the meanest capacity, contrasted with the horror inspired by the bulky and nauseous compounds whereby alone the great body of English practitioners can obtain remuneration for their services: all these things combined in gaining an entrance for it amongst many circles of the upper classes in this country. It is, therefore, with pleasure that we have extracted the foregoing passages from Mr. Garner's book, because many

^a A decillion is the number 1 with sixty ciphers.

^b As if Hanneman had not already gone far enough, in the latter part of his life he discarded the swallowing of his globules altogether. The patients were to take one or two sniffs or smells, with one or both nostrils, at a globule of sugar moistened with the potentized solution, or at one or two dissolved in half an ounce of liquid.

practitioners in the country being liable to cross-examinations, if not direct persecutions, from homœopathists, may wish to know some of the details respecting it, without having to throw away their money in buying any of the books devoted to the propagation of such miserable foolery.

These, then, are specimens of Mr. Garner's work. It is not only full of matter, but on most of the many subjects it embraces there is suggested to the mind of the attentive reader an under current of thought, imparting an additional value to the text. The plates of the comparative anatomy of the nerves are distinct and instructive; and the classical vignettes prefixed to each chapter are illustrative of the profound and scholar-like spirit in which the whole work has been conceived and executed.

The Brain in relation to the Mind. By JOSEPH SWAN. London: Longmans. 1855. 8vo, pp. 113.

THE name of Dr. Swan is already so well and favourably known to the profession, through his several invaluable contributions to their knowledge of the nervous system, that the appearance of a new work from his pen at once leads to the anticipation of further additions to the information we possess on so important a branch of anatomical science. Taking, however, a step in advance, Dr. Swan in the present volume essays a much more difficult and far abstruser study than that involving merely organic relations—the ultimate ramifications of nervous fibrilli, or the juxtaposition of neurine particles,—for the elucidation of such phenomena as are possibly explicable by the laws of mechanical communication. “The brain in relation to the mind” comes now under his scrutiny. Had Dr. Swan sought from the whole range of his vast physiological experience some subject which more than any other was involved in profound difficulties, he could not have selected other than that he has chosen. We have read his work with close attention, and have risen from its perusal more than ever impressed with the profound mystery of the connexion its pages were intended to demonstrate. We do not by this assertion for one moment wish to detract from the great merit of the author's present volume, or by one iota to lessen that praise which so much painstaking thought is entitled to; but the truth is, on one side we have an indefinite, unknown, variable element; on the other, a positive, and, to but a certain extent, a known instrument, whose *modus operandi* we seek to determine from an analysis of effects

which we, at best, can but presume to indicate the mutual reaction. In the first chapter of Dr. Swan's work we read as follows:—

“There are precise modes in which the brain favours the action of the mind. In thinking, there is a moderate activity of the cerebral structure, but a subdued or quiet condition of the external organs of sense and motion, that the entire energies may be concentrated on the subject under consideration. This exclusive state is changed if mechanical powers are used at the same time, such as writing or speaking; there is then a somewhat divided attention, or a modified activity of each process. The most gentle use of the will changes the quiet state of the mind, and imparts activity for enabling it to complete the act of thinking. The more energetic exercise of the will, in the production of powerful muscular motions, leaves very little liberty to the intellectual faculties. The processes of thinking and remembering are as much acts of the will as those which produce the motions of the muscles.”

We read further:—

“There is a great variety of ways of storing the mind with knowledge: some of them depend on the mode of education, and some on the great natural powers of the brain and mind. Some persons, by their power of thinking and memory, can prepare and fix in the brain larger deposits of information, and bring them forth with order and precision by writing or speaking; others are obliged to write them quickly, as they would not be retained for being sufficiently matured and combined, but must be written, and afterwards arranged and connected. There is a peculiarity of expression in some, arising from the quality of the intellect, or brain, or external senses, or from education or locality.”

Who can determine “the most gentle use of the will,” or yet measure its more energetic exercises? Whence proceeds the difference in the quality of the intellect, or brain, or external senses? Education acts on them; they modify education. In what does their relation rest? We confess at once, we know not.

The second and third chapters of Dr. Swan's work are devoted to the investigation of “letters and words;” “speech, writing, and calculations, as expressions of the mind.” We quote the author's words in reference to these relations:—

“Everything to be admitted by the senses must have some form when it is presented to them, otherwise it would convey only a general perception, however subtle or exalted its power. The spiritual mind would have been useless in the body, unless it had been capable of being approached by, or of approaching, the various parts through proper modes of communication. The mind can therefore

only instruct, or be instructed, through the brain, which is to be in its immediate presence; or through the nerves, which are to lead to or from it; or through the organs qualified for preparing material things for its reception and notice, or for carrying on its commands. It is in this manner, only, that the intellect can be formed and made capable of controlling the muscles and limbs."

Alluding to the form of the handwriting as indicative of the character of the mind, Dr. Swan writes:—

"It—the hand-writing—has been frequently looked upon as denoting the character of the mind: it may be so in some degree, but not by any means so frequently as to lead to any correct judgment. It is the completion of mental operations by one means, and the fibres of the brain which are concerned in the mental acts are continued into those fibres which lead to the head for its accomplishment; it is, therefore, one of the assistants of the mind, but is related to it more by the import of the words it delineates, than by the form of the letters."

As the gullibility of the public at present yields a large income to "Professors" who furnish both the simple-minded and curious with written characters derived from their penmanship, we have given Dr. Swan's opinion of the credit which such productions deserve.

In the fifth chapter, or that which treats of the different conditions of the brain for co-operating with the mind, we read:—

"The power of making acquirements varies very much in different persons; a circumstance ascribed to the larger or smaller proportions of particular parts of the brain. When the brain is very contracted, such a reason may be valid, but it is oftener to be attributed to a defect in education. A large brain is generally considered to be favourable to the extension of the intellectual faculties, but a small brain has also been found capable of promoting high attainments. The difference may depend on the quantity of the fibres; but the small brain, without any difference of composition, may, through assiduous study, have been sufficient for allowing a great extent of knowledge, and as much as is usually reached by a larger brain, which is seldom exercised to its utmost limits."

Every step which we take in the demonstrative application of our anatomical and physiological knowledge, for the explanation of mental processes, is thus circumscribed by an invisible barrier, at which we must pause and reflect. We come to possible or probable causes; we twist, contort, and apply them, and are met with some new difficulty at each turn, and finally rest satisfied with the conviction that our useful experience must result from observation rather than be guided by

theory; which conclusion satisfies our requirements for the practical purposes of life.

We might enlarge our quotations from Dr. Swan's excellent work, which affords much room for reflection, and indicates, on the part of its author, careful thought. Each one of the thirteen chapters which it contains might form the ground of a lengthened essay. We shall, however, rest satisfied with heartily recommending it as setting forth much valuable knowledge of nervous relations, even though it has failed to convince us of the simplicity or uniformity of those operations which the author's profound knowledge of the cerebral structures and nervous instruments have led him to therein promulgate.

The Quarterly Journal of Public Health and Record of Medicine; including the Transactions of the Epidemiological Society of London. Edited by DR. B. W. RICHARDSON. London: Highley. No. I. March, 1855.

IN this utilitarian age, when public health and public wealth are justly regarded as synonymous terms; when human ingenuity is strained to the uttermost for the maintenance of individual prosperity and national greatness; and yet when, in spite of such a spirit being aroused, so many proofs of the sad and lamentable consequences resulting from ignorance, incapacity, or negligence, exist:—a new periodical is offered to the public, in which the ability and experience of those most competent to direct, and equally anxious to instruct, may be rendered available to the general community, and to the medical profession in particular, in whose hands more especially so much of what is essential, not only for individual safety, but, as recent circumstances have too sadly demonstrated, for national honour, rests. We welcome with acclamation the "Quarterly Journal of Public Health." It has sprung from the necessity of the times. At no period of the world's history was it more essential that those in high places, and those around us, should be assured of the great truth, that "unity is strength,"—that, unless the several elements constituting power be preserved in their fullest integrity, when the hour of trial comes, disappointment, disgrace, and death, must be the result.

It is a fact that cannot be too strongly impressed on the minds of all, that hygienic measures have a direct as well as remote influence on each. The thunder of cannon, the ring of the rifle, the glitter of flashing steel, deal death and destruction

around. Men, eager for the subjugation of their fellows, rush in mortal fray together; thousands strew the battle plain, where victory and valour, when the fight is done, sit weeping for all who have parted their lives nobly and well. Public monuments attest the fall, and national tears water the tomb, of those who sleep a soldier's sleep, and find a hero's grave. There is, however, in the hour of triumph, a spy which steals amongst the ranks to open a way for the secret foe; an enemy which seizes the strong man in his day of might, and withers the laurel round the victor's brow: DISEASE, with silent, stealthy step, cometh on the wings of the wind; now walking on the earth, and again flying through the air, its power is felt, not seen. The stalwart form bends weak and low; the brilliant eye wanes faint and dim; the noble heart in anguish throbs, as feeble notes falling from the parched tongue murmur through the thinning ranks, "Here is an enemy greater than the sword." To arouse public attention to this dread fact, to instruct, assist, advise, is the object of the present publication. We have heard too much of "sad occurrences," "unforeseen circumstances," "lamentable visitations," on the part of those who "make their fortunes, and then rail at fate." We bow, in all submission, to the inscrutable hand of an overruling Providence; but we contend that, because events are so permitted, man must not be excused for neglecting those several remedies which the same power, inflicting such tribulation, places at his disposal for their limitation and relief.

We need only refer to the Transactions of the London Board of Health, and the Dublin Sanitary Association, for ample proof of what mighty results may be accomplished by bringing science and energy to bear on sanitary reform. In our own city, more especially, we had a merciful exemplification of the benefit to be derived from the anxious scrutiny and removal of causes known to operate favourably for the propagation and extension of epidemical disease. Providence blessed the means employed, and we were spared a renewal of previous miseries. With facts of this nature open to all, why is it that efforts directed to such an end should ever be relaxed? Simply, because it seems to be an idiosyncrasy of the public constitution that when danger is past, when the alarm is gone by, when safety is apparent around, that their efforts cease to be exercised, their attention becomes withdrawn, their trust in the future unlimited, and their rule of faith reduced to that much misapplied motto: "Sufficient unto the day is the evil thereof." With the object of preventing a recurrence of and removing the condition induced by this state of the public mind, "The Journal of Public Health" has

been originated. Is it, or is it not, a valuable record? Will it, or will it not, be a matter of national importance that it be maintained; that those who have special opportunities of forwarding its views, contributing to its pages, and extending its use, may find in the general recognition of their labours fresh motives for exertion? The answer to this question rests with the several corporate bodies, sanitary associations, and philanthropic societies throughout this and the sister country; with those, in fact, on whom devolves the responsibility of guarding and guiding the public safety!

We have, in a recent Number of our Journal, noticed an able and valuable communication, having reference to the sewage of cities, from the pen of Dr. Charles Moore, who brought to bear on this question a large practical experience and close observation of disease, acquired both abroad and at home. We have also, throughout our pages, and when opportunity prominently offered, impressed the necessity of cultivating this important subject, and willingly lent ourselves to the record of those measures which might be advisable for such an end; more than this the character of our Journal would scarcely permit. We trust, however, that now we shall find our readers, from the pages of our contemporary, fully supplied with information on those points which, though less available for the treatment of individual cases of disease, are not of less importance in their application to the question of human suffering in the aggregate.

The Journal before us numbers among its contributors men of known scientific character and great practical knowledge. The original communications in this, the first Number, are remarkable for their earnestness in the cause of sanitary reform; they include articles on the "Sanitary and Social Condition of the English Poor," "Short Notes on some of the Details of Sanitary Police," "Hygienic Rules for the Preservation of Health in Western Africa, and other Tropical Climates," and "The Scientific Investigation of Sanitary Questions." The specialty of their object is steadfastly maintained, and the several questions they discuss ably and pointedly argued.

The review department shows evidence of a candid and encouraging spirit, that wishes to foster, not crush; to reform, rather than rebuke. While such continues to be its character, from our pages it shall not fail to receive the warmest support.

A separate section is devoted to the consideration of the progress of epidemics. The necessity for some careful record and investigation of those mysterious visitations has already, in

former pages of this Journal, been fully dwelt on; much time, anxiety, and labour, having been expended in furnishing the Irish profession with the details of the epidemics which, in the year 1848 and 1849, proved so fatal in this country, and was also generally experienced throughout Europe.

In the section devoted to local reports of epidemic and endemic diseases much important and valuable information is afforded, and statistical tables set forward of the nature, termination, and locality of several diseases. The section of sanitary and social science is equally worthy our commendation. In matters of this nature we are proud to say the Irish medical school has already made worthy progress. We have but to refer to that part, No. 3, of the Irish Census for the year 1851, where under the "Report on the Status of Disease," an amount of statistical medical knowledge is offered of which, without fear of contradiction, we affirm no parallel exists. From such great, comprehensive, and truthful tables, general rules can be alone adduced, whose special application is thenceforth a question for those acquainted with the particular circumstances of any given locality. The pages of this "Journal of Public Health" will, we trust, become the means of communication for similar formulæ from different districts, so that from their general analysis even more extended views may be acquired. In asserting for our city the first step in this direction, we but claim to be considered as pioneers in a great important public movement, which may afford materials for thinking, and rules for action, to those placed in authority over us, and we do so, confident that they will receive that care which the greatness of the interests involved demand.

A Practical Treatise on Foreign Bodies in the Air-Passages, with Illustrations. By S. D. GROSS, M. D., Professor of Surgery in the University of Louisville. Philadelphia: Blanchard and Lea. 8vo, pp. 468.

APART from a little gasconade, which we believe to be indigenous to the Transatlantic soil, Dr. Gross has written a very useful book, and supplied a desideratum long required. The volume before us contains an accurate record of no less than two hundred cases of foreign bodies in the air-passages, and fifty of these are here published for the first time; the entire collected, arranged, analyzed, and tabulated, with great pains, and undoubtedly much labour in collection, scattered as they are through a vast mass of periodical literature. The author

has, notwithstanding, accomplished his task most creditably, and produced a highly valuable book of reference on a most important subject in the practice of medicine.

The work commences with a catalogue of substances which have been found in the air-passages—a most curious and diversified list, divided into three classes, as they are derived from the vegetable, the animal, and the mineral kingdom. The following constitute a few from each division:—

1. From the Vegetable Kingdom. Beans of almost every description; the seeds and stones of fruit; acorns, pills, pieces of bread, of carrots, of cabbages, of ginger, of mushrooms, of walnut-shells, of potatoes, of nutmegs, of sealing-wax; linen; ears of grass, rye, and barley; gum-elastic pipe stems; the wooden stopper of an inkstand, the berry of the bladder-senna, charcoal, fiddle-peg, threads, locks of tow, leaves, &c.

2. From the Animal Kingdom. Bits of hard-boiled egg, beef, veal, cartilage, tendon and bone, clots of blood, flies, millipedes, leeches, worms, fish, lobster-claws, mussel-shell, quills, button foils, worsted yarn, locks of wool, cloth, and teeth—natural and artificial, human and animal.

3. From the Mineral Kingdom. Buttons, button-moulds, pins, needles, shot, bullets, marbles, different kinds of coin, pebbles, slate, jewels, glass, delft, carpet-tacks, brass nails, horseshoe nails, glass beads, pipe stems, dress hooks, ring of a watch-chain, silver tube, screw nails, and porcelain teeth. This is a motley collection, no doubt, but it serves to prove what has been long since remarked and explained by the late Dr. Houston, of this city, that bodies the most unlikely from their size and shape to pass through the rima glottidis have, nevertheless, found admission into the air-tubes; while there, it appears they undergo little change, if we except those substances which are capable of imbibing moisture. This fact is strongly attested by the very remarkable case recorded by Dr. Hughes among the original communications in our present Number, where a fish-bone, although remaining in the bronchial tube or lungs for fifteen weeks, had undergone not the least alteration in character or structure; and Dr. Gross commenting on a case under the care of Mr. J. G. Forbes, in which an operation was decided against on the ground, among others, that if the offending substance was a piece of gristle it might be softened and coughed up, says, *more Americano*, “we might as well wait for the softening and disintegration of the rock of Gibraltar by the waters of the Atlantic and Mediterranean, as for the softening of a persimmon stone and a piece of gristle by the heat and moisture of the air-passages.”

The situation of foreign bodies in the air-tubes will greatly depend on their size, shape, and weight. In order to determine as far as possible their relative frequency in different portions of the air-passages, Dr. Gross analyzed the cases reported in this work, and found that the number of cases of death, without operation and without expulsion of the foreign body, was 21. In these the substance was situated in 11 in the right bronchus; in 4 in the larynx; in 3 in the trachea; in 1 partly in the trachea and larynx; in 1 in the lung; and in 1 in the right thoracic cavity. *In not a single instance did it occupy the left bronchial tube.* In 34 cases subjected to operation or general treatment, the extraneous substance was situated twice positively and eleven times probably in the right bronchial tube; four times certainly and four times probably in the left bronchial tube; seven times in the trachea, and fourteen times in the larynx. In two of the above cases a careful examination of the chest during life rendered it evident that the foreign substance, although found in the left bronchial tube after death, occupied the right bronchial tube during the greater portion of the time which intervened between the occurrence of the accident and that event.

This tendency of foreign bodies to pass to the right side is most striking, and, as originally remarked by Dr. Stokes^a, and again referred to by Dr. Hughes, principally if not altogether occasioned by a peculiar anatomical arrangement of the mucous membrane at the bifurcation. Just at the junction of the two bronchial tubes the lining membrane forms a septum, spur, or ridge, which is situated, not exactly in the median plane, but evidently to the left of it. Hence, a body of any considerable bulk, after it passes the larynx, will be very likely, by striking this septum, to be pushed over to the right side, and its entrance into the corresponding tube is still further favoured by its greater diameter.

In the next section the author cites some cases to show that foreign bodies may enter the air-passages by other avenues than the glottis. The first is one by La Martinière, in which a boy, aged ten years, was amusing himself by cracking a whip which had a pin tied to the extremity of the lash; the pin, fifteen lines in length, entered the neck just below the cricoid cartilage, traversed the trachea from right to left, and even pierced its posterior wall; as also another, which occurred to a patient who applied at the Middlesex Hospital, complaining that soon after his dinner he felt something in his throat. He was examined, but

^a On Diseases of the Chest, vol. i. p. 271.

nothing was detected. A tube was passed into the stomach, and a quantity of mutton broth, which he had for dinner, was brought up; five days after, he died, and on dissection, a portion of the vertebra of a sheep was found to have made its way, by ulceration, from the pharynx to the lower part of the trachea.

The immediate effect of the introduction of a foreign body into the larynx or trachea, is suffocation, if the substance be of sufficient size to completely obstruct the passages of air; but fatal effects are occasionally produced by the impaction of foreign bodies in the pharynx and oesophagus. Two circumstances may induce these effects: mechanical occlusion, and spasm of the glottis. The celebrated case of Habicot is cited in illustration.

A lad, aged 14, swallowed nine pistoles wrapped up in a piece of cloth, in order to hide them from thieves. The packet being too large to pass the oesophagus, lodged in the narrow part of the pharynx, where, by its pressure on the windpipe, it produced the most intense distress, attended with a sense of suffocation, and a livid and swollen state of the face and neck. Bronchotomy was performed with great relief; but the coins had to be pushed into the stomach, from whence they descended into the bowels, and were discharged at different times from the anus.

The third chapter treats of the *pathological* effects of foreign bodies. The most common, as might be expected, is inflammation of the mucous membrane, either partial or diffused, producing an effusion of coagulable lymph, or softening of its texture, and even ulceration, usually of small extent, and limited to the parts in contact with the foreign substance. The lungs also are liable to become inflamed, and abscesses to form where a foreign body is long retained in the bronchial tubes; and this continued retention induces the deposition of tubercular matter. Oedema of the larynx, pulmonary emphysema, enlargement of the bronchial lymphatic glands, and pleuritis, are also observed after the accident; and it is curious that those pathological changes may all occur where the obstruction takes place, not in the bronchial tubes or the lungs, but in the larynx or upper portion of the trachea. The heart and pericardium, and also the liver, have been implicated.

These are the principal effects of the intromission of foreign bodies into the air-tubes; and we next come to a description of the symptoms they occasion, which may be divided into those occurring at the moment of introduction, and into those which arise in consequence of their sojourn there.

"In the great majority of instances, the moment a foreign body enters the air-passages the patient is seized with a feeling of annihilation; he gasps for breath; looks wildly around him; coughs violently, and almost loses his consciousness. His countenance immediately becomes livid; the eyes protrude from their sockets; the body is contorted in every possible manner, and froth and sometimes blood, issues from the mouth and nose. Sometimes he grasps his throat and utters the most distressing cries; the heart's action is greatly disturbed, and not unfrequently the individual falls down in a state of insensibility, unable to execute a single voluntary function. Sometimes a disposition to vomit, or actual vomiting occurs, immediately after the accident, especially if it take place after a heavy meal. In some instances, again, there is an involuntary discharge of faeces, and even of urine. Several instances are mentioned in which the patients threw up a considerable quantity of blood during the violent coughing, immediately consequent upon the accident.

"The duration of the paroxysm varies from a few seconds to several minutes, or in some cases even to several hours; and the calm which ensues after the first paroxysms have passed away varies very much in its duration. Occasionally it lasts for many hours, or, perhaps, even for a whole day and night, but generally it is comparatively short, not exceeding fifteen, twenty, or thirty minutes. The paroxysm then recurs, and after having continued a few seconds, probably with great violence, the parts become again tranquil; however, to be excited again into action by the irritation of the extraneous substance."

The foregoing is a very full and graphic description of the symptoms following the entrance of a foreign body into the windpipe in a well-marked case; but they do not occur with any regularity, and in many instances their appearance is postponed for months or years, and sometimes they are not present at all. We could quote many instances in support of this fact, which we are certain must be familiar to most of our readers.

Dr. Gross next considers in detail the symptoms denoting the *secondary* affections caused by the retention of the foreign body, and he dwells particularly on the character of the cough, which is usually spasmodic; sometimes mild, at other times severe, frequently accompanied by a sense of tickling in the throat, with more or less soreness, and even pain, in the respiratory tubes, and at the top of the sternum,—in one case it resembled the click of a valve, in another the barking of a fox. Sometimes it is of a croupy character; and when this peculiarity is present, it renders the diagnosis between that disease and the existence of a foreign body very difficult.

The cough is occasionally influenced by position. A patient may be perfectly free while he is sitting up or lying down,

but when he rises or moves his body, he is seized with a paroxysm.

The state of the voice is not of very great import; in most instances it is unaffected. But cases have occurred in which, in consequence of the morbid action produced by the foreign body, it is, as it were, cracked or broken; sometimes it is reduced to a mere whisper; and rarely it is altogether extinct.

Flapping noise (*bruit de souffle?*), expectoration, discharge of blood, are enumerated as belonging to the accident, but they are in no way characteristic of it; we therefore pass them by; and when we examine the next symptom, *pain*, we find it to be exceedingly variable, and not always to follow the introduction of a foreign body into the air-passages. When it is present it varies very much in degree and character. It may be sharp and pricking, or dull, heavy, and aching; and is aggravated by coughing, or the slightest change in the situation of the foreign body. It may be limited and fixed at one spot, more especially when the foreign body is impacted or immovable; or it may pervade the trachea, larynx, bronchial tubes, and even the lungs. The pain, as a general rule, will be greater when the foreign substance is large and rough than when it is smooth and small; and instead of pain, we have sometimes soreness occurring at various points of the respiratory apparatus.

The phenomena of respiration are exceedingly interesting. When a foreign body lies in the bronchial tube, of such a size as almost completely to fill it up, the patient can freely inspire through the sound side; but he finds it almost impossible to expire. Every attempt to expel the air from the obstructed lung is attended with great suffering, and a feeling of exhaustion. If, under these circumstances, we make a physical examination of the chest, we find both sides equally clear; while there is an absence of the respiratory murmur on the affected side, and puerile respiration on the other.

This condition, of course, lasts only a short time; we soon have engorgement of the pulmonary tissue, followed by inflammation and its signs.

The position which a patient with a foreign body in the air-tubes assumes is very peculiar. As a general rule, he finds it most comfortable to maintain the erect or semi-erect posture. As soon as he attempts to lie down he is seized with an increase in the embarrassment of breathing, with a disposition to cough, and a feeling of suffocation. During sleep he is, consequently, obliged to be propped up in bed, and not unfrequently he is compelled to take what sleep he may be able to obtain in a

chair; sometimes he rests best on his back, and sometimes again upon one side.

Emphysema, a symptom first noticed by Louis, is a very rare occurrence, and the general health is variously affected; sometimes slightly, sometimes severely, and sometimes again not at all.

In the chapter on *diagnosis* the author laments the uncertainty appertaining to this subject. He urges the early and careful investigation of each case, and says:—

“ The rule is to act in the most prompt and efficient manner on the well-known principle, that although the foreign body may not immediately prove fatal, yet the longer it is retained in the parts the greater will be the probability that it will ultimately destroy the patient, by keeping up an amount of irritation, the effects of which the respiratory apparatus, and the system at large, cannot permanently resist.”

He continues:—

“ Those accidents most frequently occur in infants and children, who can but ill express their feelings; and hence one of the first duties, on the part of the practitioner, is to inquire most carefully and circumstantially into the history of every case that is brought before him. Very frequently some time elapses before he can reach his patient, and when he does he finds him acting and feeling as if nothing had taken place. These are the very cases in which the professional attendant allows his mind to be lulled into a state of security, no less injurious to himself than destructive to his patient. It is generally different with adults, who are usually conscious of the time and manner of such accidents, and give a correct account of them.”

With these general observations, and some remarks on the differential diagnosis between the intromission of a foreign body and hooping-cough, spasm of the glottis, the pressure of an aneurismal tumour, the irritation of worms in the alimentary canal, and the impaction of extraneous substances in the pharynx and œsophagus, which are obvious enough to all practical men,—Dr. Gross next discusses “ the diagnosis of foreign bodies in the larynx;” and, after admitting the difficulty of determining the precise situation of a foreign body in the air-passages, he relates sixteen cases bearing on this point, and concludes, as a general rule, that whenever there is aphonia, whether partial or complete, the foreign substance is situated in the larynx,—this is, he says, certainly the case, if conjoined with this symptom there is pain, soreness, or uneasiness in the region of the larynx, along with dyspnoea, a whistling sound in respiration, absence of serious disease in the bronchial tubes and lungs,

and inability, on the part of the observer, to perceive the offending body moving up and down the trachea.

But when a foreign body descends below the larynx, it is usually arrested in one of the bronchial tubes, most frequently the right. When this is the case, the signs characteristic of its presence are, clearness on percussion and diminished respiratory murmur on the affected side. Both these signs vary in degree, and are proportionate to the amount of pulmonary obstruction; but in most instances, the respiratory murmur is only somewhat lessened in intensity because a certain quantity of air still enters the lung by the side of the foreign body. The next symptom, long since noticed by Burns, is the tendency which foreign bodies of a smooth rounded shape have to play up and down the trachea, either accompanying the respiration or in consequence of severe fits of coughing. In many cases the patient is not only conscious of this movement by the peculiar sensation which it produces, but it can be even felt and heard. Mr. Fergusson perceived the impulse which a plum-stone in the trachea gave when a patient coughed, and the existence of the substance was even more satisfactorily determined in this way than by auscultation. The *noise* produced by a foreign body, or rather by the air, as it rushes past it, is so peculiar, that it may be regarded as pathognomonic of the nature of the accident; and in illustration of this subject, Dr. Gross refers to the cases of Mr. Maenamara, recorded in the fifth volume of the Dublin Hospital Reports, in which this peculiar "ronflement" was heard on applying the stethoscope to the trachea. "The flapping noise" described by the late Mr. Bransby B. Cooper, Dr. Gross does not recollect to have noticed, nor does he think it of general or frequent occurrence, hence, he is not inclined to place any confidence in it as a diagnostic sign.

This portion of the volume concludes with a brief notice of Mr. Hawkins' case; from which, and others quoted by him, Mr. Hawkins endeavoured to prove, that when an extraneous body is lodged high in the trachea, or partly in the trachea and partly in the larynx, the nature of the affection will be evinced by the entire absence of cough, by the integrity of the voice, by the constant whistling sound in respiration; by the fixed soreness, pain, or uneasiness at the seat of the obstruction; and by the ability of the patient to laugh, speak, and eat, as if nothing happened. Dr. Gross neither contradicts nor confirms Mr. Hawkins' views, but remarks they are entitled to attentive consideration, and their value must be determined by future observation.

We have now given a full analysis of what we consider the most useful portion of Dr. Gross' work, namely, the mode of admission, the pathology, symptoms, and diagnosis, of foreign bodies in the air-passages; and, notwithstanding the great care and labour he and others have bestowed on the latter part of the subject, we must admit it is still involved in great difficulty and uncertainty. It is true, that the presence of foreign bodies, of such a size and form as to cause complete obstruction to the entrance of air into one side of the chest, is easily recognised, and also that of bodies which are capable of moving with the respiration. But there is another class of substances, whose existence and situation in the air-passages it is most difficult to determine, namely, those of slender form and pointed extremities, which create little obstruction to the respiration, and whose symptoms are easily confounded with those of simple irritation and inflammation of the mucous membrane. Nothing, in our mind, is likely to clear this obscurity save a minute inquiry into the early history of each case, with a view to its correct diagnosis and successful treatment. Signs and symptoms are variable, often transitory, and of themselves insufficient to declare the presence of foreign bodies such as we have last described. The early history, then,—and we are glad to find Dr. Gross lays considerable stress on this point,—appears to us a most important item in the case, and every endeavour should be made to obtain it. Taking it in connexion with the symptoms and physical signs, we shall (save in very rare instances) be able to arrive at a just and proper conclusion; without it, we must be likely to fall into error.

Of the remaining portion of this Treatise we do not purpose giving any minute analysis, although it contains Tables constructed with great care, and the reports of numerous cases highly interesting and instructive. We can only glance at the substance of each chapter. The first Table consists of forty-nine cases of spontaneous expulsion, followed by recovery; and of it we can only say, it is very curious, but we opine no patient nor practitioner of the present day would remain inactive and wait for this favourable result. That such an event may occur, is, however, worth knowing. Eight cases are recorded in which death followed the expulsion of the foreign body.

Chapters VII. and VIII. contain the medical treatment: consisting of:—Emetics, with a Table showing how they succeeded in three cases and failed in forty-six. In some of the latter their exhibition was not only prejudicial, but even dangerous, as the patients appeared nearly suffocated from the

foreign body being forcibly impelled against the larynx in the act of vomiting. Sternutatories,—which have been almost invariably unsuccessful. Inhalation of iodine, tried only in one case by Mr. Day, and with success. The first inhalation, which was rather strong, was continued for five minutes, and produced violent coughing and nausea. The operation was repeated during the same evening, and in the paroxysm induced by it the foreign body, the vertebra of a fish, was ejected from the windpipe, where it had lain for six years. Antiphlogistic means,—which should be employed in all cases, and inversion of the body, either with or without bronchotomy.

Chapter IX. is devoted to the surgical treatment; and on this subject Dr. Gross' opinion coincides with that of all practical surgeons of the present day:—

“The proper practice,” he says, “is in all cases, without exception, to perform bronchotomy as soon as possible after the occurrence of the accident: the artificial aperture effectually prevents spasm of the muscles of the larynx, and thus enables the patient to breathe with greater freedom, at the same time that it permits the foreign body, if it do not escape at once, to play up and down the air-tubes with comparative impunity.”

After considering the anatomy and physiology of the parts, and reviewing the history of bronchotomy, Dr. Gross compares the difficulty of laryngotomy with tracheotomy. He considers the former very simple and easy, the latter often very difficult, more especially in children; yet, owing to the uncertainty of the diagnosis of foreign bodies in the larynx, that portion of the tube should seldom be opened if it be possible to employ tracheotomy. He says:—

“The latter operation, although much more difficult, has the advantage in many instances of enabling the lungs to expel the offending substance, however high it may be situated, and of affording the surgeon ample opportunity of dislodging it with his mop and other instruments when it occupies the larynx.”

In performing the operation of bronchotomy, Dr. Gross does not think it can be necessary to divide the thyroid cartilage in its entire length; neither does he think it advisable in any case to widen the wound in the trachea by excising a portion of its edges, so as to impart to it an elliptical form. He considers it objectional to use a canula after the operation; and he would not omit the administration of chloroform in any case. The difficulties of the operation of bronchotomy, the extraction of the foreign body, and the instruments used for these

purposes (of which representations are given), are very fully discussed, and will well repay an attentive perusal.

The remainder of the book, and not the least important part of it, is devoted to the Tables and narratives of the cases which had undergone the different operations, followed by the expulsion of the foreign body and the recovery or death of the patient. 13 cases of successful laryngotomy are recorded; 60 of tracheotomy, and only 8 in which this latter operation was followed by death. Laryngo-tracheotomy was performed successfully 10 times, and in 3 cases it was followed by death. Bronchotomy was repeated in 3 cases, and 3 times in one of them,—of these 3 cases 1 only was followed by recovery. This portion of Dr. Gross' volume displays most extensive research, and as a work of reference on so important a subject, we consider it essential to the practitioner. The woodcuts are excellent; the index is full; and altogether the book is well got up. We conclude by recommending it to our readers, fully persuaded that its perusal will afford them much practical information, well conveyed, evidently derived from considerable experience, and deduced from an ample collection of facts.

Food and its Adulterations: comprising the Reports of the Analytical Sanitary Commission of the Lancet, for the years 1851 to 1854 inclusive, revised and extended: being Records of the Results of some Thousands of Original Microscopical and Chemical Analyses of the Solids and Fluids consumed by all Classes of the Public; and containing the Names and Addresses of the various Merchants, Manufacturers, and Tradesmen, of whom the Analyzed Articles were purchased. By A. H. HASSALL, M. D., &c., Chief Analyst of the Commission. Illustrated by 159 Engravings, showing the intimate Structure of the greater number of the Vegetable Substances employed as Articles of Food; also the majority of the Substances used for Adulteration. London: Longman, Brown, Green, and Longmans. 1855. 8vo, pp. 659.

IN France any movement made for the improvement of the sanitary condition of the people, whether it be to guard against the adulteration of articles of food daily consumed, or to afford pure air and free ventilation, or to give protection against the frauds practised in the sophistication of medicines, always originates with the Government of the country. In the British islands and their dependencies, just the opposite course is followed; our legislators thinking it, we suppose, beneath their

dignity to notice or be guided by the Roman adage—*salus populi suprema lex*,—leave everything connected with the public health to private enterprise; and although after the lapse of many years, some little may be done with parliamentary sanction, it is done invariably in a niggardly and grudging spirit. Thus fraud and quackery flourish; every man is supposed to be the best judge of how to manage his own health; and no protection being afforded directly by law against the grossest adulterations of what we eat and drink, the seller is exposed to a temptation which, more than all others, encourages crime, that of escaping punishment even if perchance detected, and the buyer to the almost certain chance of obtaining unwholesome, nay, often poisonous food. These remarks apply equally to nearly every article of the *Materia Medica*, on the goodness of quality of which the public may be said to depend for restoration to health when in a state of illness. What is the advantage to the physician, that the many splendid text-books on *Materia Medica* in the English language abound in illustrations of the varied sophistications practised on drugs and medicines, with explicit and certain rules for their discovery, if the law affords him no protection in the case of his detection of those adulterations having been practised? How long will the English people permit their health as well as their patience to be abused by this carelessness for their welfare on the part of those in power? How long will the members of our Houses of Parliament suffer themselves to be set aside with the laugh or sneer of a British minister, to be told, as they were by Sir James Graham, when such matters were pressed on the Government some years since, of the soundness of the rule,—*caveat emptor*,—and that—

“ The pleasure of being cheated
Is as great as 'tis to cheat.”

We are just now on terms of the greatest amity with the French nation. It was ever the fashion to decry their military education, their attention to what we considered the lesser accessories of warfare; yet a very short experience on the field showed us the value of this attention to such minutiae, and we are now gladly endeavouring to adopt them: nay, a commission has even been sent to France to obtain information as to how the military medical department is there managed, and what renders it so superior to our own; why not also send a commission to inquire into the regulations of the Government of that country, which have been in active operation for many years, against the adulteration of food and medicine?

Consequent on the encouragement afforded by those in power and by the law, the French language abounds in excellent monographs on this subject, some of which we have from time to time brought under the notice of our readers^a; while the volume whose title is prefixed is, we may say, the first attempt at a complete and scientific treatise on the adulterations of food ever published in England. Its origin is described by Dr. Hassall as follows:—

“ In 1850, the author of this work first came to reside in London. Many months had not elapsed before he perceived that there was something very wrong in the state of most of the articles of consumption commonly sold, and he was particularly struck with the condition of the ground coffee as ordinarily met with. This led him to make some examinations, principally microscopical, of different samples of this article. The results of these examinations were embodied in a paper which was communicated to the Botanical Society of London. The subject attracted considerable attention, and notices of the paper read were promptly inserted in nearly all the daily and weekly newspapers, including the ‘Times.’ The author next turned his attention to Sugar, and prepared a paper, which he likewise intended to submit to the above-named Society; he also resolved in his own mind to follow up the subject of the Adulteration of Food, perceiving its important nature. In the meantime, after the publication of the paper on Coffee, and before the reading of that on Sugar, Mr. Wakley communicated with the author, stated his conviction that the exposure of adulteration would fail to produce any beneficial effects, unless it was accompanied by the publication of the names and addresses of all parties of whom the articles examined were purchased, and this whether they were found to be genuine or adulterated; and he asked, whether it was possible that the inquiries could be so conducted as to admit of the publication of the names and addresses of the manufacturers and tradesmen of whom the articles were procured, and whether the writer was prepared to undertake a series of investigations on the subject of adulteration. After a little consideration, the reply was in the affirmative. On this, Mr. Wakley determined, after having given due warning and notice, to publish the names and addresses of all parties which the author might furnish to him, and Mr. Wakley further devised the Title under which these Reports have from time to time appeared.

“ For a period of nearly four years, the Reports in question have now been published with considerable regularity, and during that time the names and addresses of hundreds of manufacturers and tradesmen have been made known, and much good in a variety of ways has resulted. The consumer, the revenue, and the honest trader, have all been greatly benefitted.”

^a N. S. vol. x. p. 175, and vol. xiv. p. 475.

These reports, now completed for the present, furnish the volume before us, and although we think they might have been most judiciously condensed, much of the details suited for the columns of a weekly medical periodical being quite unsuited for the pages of a scientific book,—for example, the mendacious puffs of the London coffee-dealers, which are reproduced at length, and the disputes and angry correspondence into which the “*Lancet*” was drawn by many of them,—we gladly accept the work as a whole, and we think Dr. Hassall is deserving of much praise for the patient labour, skill, and ability he has displayed in its compilation.

It would be quite impossible to attempt even an outline of the contents of this bulky volume, much less any analysis of it; we shall rather try to indicate the description of matter to be found in its pages by the selection of a few extracts from some of the subjects noticed.

It is not uncommonly said that the best way for a purchaser to secure the goodness and purity of *any* article is to pay the highest price for it; that this rule does not apply to articles of diet is proved by the following statements regarding isinglass and cinnamon, two substances in daily use, both in diet and in medicine. We should first premise, that the particulars regarding the analyses of the several samples of the various articles examined are presented to the reader in tabular forms.

“From the above Table, it appears that out of the twenty-eight samples of isinglass submitted to examination, *ten, or more than one third*, of the samples consisted entirely of gelatine.

“That the price of the genuine isinglass varied from 8*d.* to 1*s. 4d.* per ounce; while that of the gelatine ranged between 10*d.* and 1*s. 4d.* per ounce.

“Now, as isinglass is very different from gelatine in many of its properties, and as it is undoubtedly much the superior of the two, it is evident, from these inquiries, that the public are seriously imposed upon and injured by the substitution for isinglass of such an article as *gelatine*.”

Regarding cinnamon, we read,—

“1st. That of the *whole* cinnamons, *seven* were *genuine*, and that *five* consisted of nothing but *cassia*.

“2nd. That while the prices per ounce for the *whole* cassias varied between sixpence and one shilling, one being charged sixpence; three, eightpence; and one, a shilling; those for the cinnamon also varied between sixpence and one shilling; one being charged sixpence; three, eightpence; and three, one shilling.

“3rd. That out of the *nineteen* samples of *ground* cinnamon, *three* consisted entirely of *cassia*.

“4th. That ten of the samples, more than one-half, were *adulterated*, the articles most frequently employed being either *baked wheat-flour* or *sago-meal*, separately or in combination; but *East India arrow-root* and *potato-flour* were likewise detected, each in one instance.

“5th. That of the above adulterated samples, *three* consisted of *cassia*, adulterated; and *seven* of *cinnamon*, adulterated.

“6th. That *six* only of the *nineteen* samples were *genuine*.

“7th. That the prices given per ounce for the powdered *cassia*, substituted for *cinnamon*, were sixpence and eightpence; one being sixpence, and two eightpence.

“8th. That the prices paid for the genuine powdered *cinnamon* were sixpence, eightpence, and one shilling per ounce: two being sixpence, three eightpence, and one a shilling.

“9th. That the prices charged for the adulterated articles, whether *cassia* or *cinnamon*, were fourpence, sixpence, and eightpence per ounce, viz., one at fourpence, three at sixpence, and six at eightpence per ounce.

“It thus appears that in the prices charged for *cassia* and *cinnamon*, whether whole or in powder, and whether genuine or adulterated, no constant difference is to be observed, and consequently that the public suffer great loss by the substitution of *cassia*, which is so much cheaper, for *cinnamon*, and a still greater loss by the other sophistications. Further, it appears that, contrasting the prices of genuine whole with those of genuine ground *cinnamon*, for some reason unknown to us, the latter are sold at a cheaper rate than the former.

“It will be observed that the *wheat-flour* and *sago-powder* used for the adulteration of ground *cinnamon* are stated in the analyses to have been *baked*; the purpose of this is obvious,—namely, that they may assimilate in colour to either *cinnamon* or *cassia*, and thus the better escape detection.”

The following, regarding that much puffed humbug, *revalenta*, cannot fail to interest our readers:—

“ANALYSIS OF DU BARRY & Co.’s REVALENTA ARABICA.

“(The first sample analysed was purchased of J. Revell, 272, Oxford-street.)

“This article was found to consist of a mixture of the *Egyptian* or *Arabian lentil* and *barley-meal*.

“(The second sample was obtained from the dépôt, 127, New Bond-street.)

“This sample was found to consist, like the first, of a mixture of the *red* or *Arabian lentil* and *barley-flour*, sweetened with *sugar*.

“A third sample consisted of the *Arabian lentil* and *barley-flour*, with the addition of *saline matter*, principally *chloride of sodium* or *common salt*; it also possessed a peculiar taste, as though flavoured with *celery-seed*.

“ While Warton’s Ervalenta is of a yellowish colour, Du Barry’s Revalenta is of a pink or rosy hue; this arises from the different species of lentil employed, the German being yellow, and the Arabian lentil of a red colour.

“ The taste of the first of the three samples of Du Barry’s Revalenta submitted to analysis could scarcely be distinguished from that of pea-flour; that of the second sample was much more agreeable, owing to the quantity of sugar which it contained; while in the third sample the salt and peculiar flavour already referred to as resembling that of celery-seed could be distinctly recognised.”

“ It will be observed that under the heading ‘ Cruel Deception on Invalids Exposed,’ Du Barry & Co. make quotations condemnatory of lentils and barley-flour, and as these enter largely into the composition of their own article, by inference this is condemned even on their own showing.”

The author, after an account of the many other compounds sold under this and similar designations, goes on to say:—

“ Lentils belong to the natural family of plants, *Leguminosæ*, which includes the several kinds of beans and peas; they resemble, to a very great extent, in colour, structure, taste, and properties, the common pea; so great, indeed, is the similarity in organization, that it is difficult to discriminate between them, even by the aid of the microscope.

“ Lentils, peas, beans, &c., all contain a considerable amount of nitrogenized matter, in the form of *Legumine*; when taken as an article of diet, they are found by most to be somewhat difficult of digestion, to occasion distention and flatulency, and to be slightly aperient. These properties and effects are so similar in the case of each, that it is almost impossible to draw any decided line of demarcation between them.

“ ‘ Purified lentils’ are prepared under a patent, by Mr. Nevill, who formerly supplied Du Barry & Co. with the article, at £10 per ton; that is, at about one penny and a fraction per pound.

“ The admixture of barley and other flours with lentil powder is not to be regarded in the light of an adulteration, since the cost of barley-flour exceeds that of the lentil, being about £13 per ton.

“ The object of this mixture is chiefly to diminish the strong flavour of the lentils, and which is so disagreeable to many. Messrs. Du Barry and Co. still more effectually accomplish this object, in some cases, by the addition of sugar.

“ Extremes meet: lentils being somewhat cheaper than peas, are supplied to many of our workhouses, to be used in the preparation of soup, &c. Thus they are not only consumed by paupers, but by the rich, the chief difference being, that the latter frequently pay 2s. 9d. per pound for them.

“ As the cost of most of the prepared lentil powders—viz., 2s. 9d. per pound—forms a very serious obstacle to their use, supposing that in any respect it is desirable that they should be more generally con-

sumed, we have framed the two following receipts, whereby a considerable saving of expense may be effected:—

“ 1st Receipt.

Red or Arabian lentil-flour,	2 lbs.
Barley-flour,	1 lb.
Salt,	3 oz.

Mix into a uniform powder.

“ The ‘directions for use’ it is unnecessary to detail, as they have been already fully given in the prospectuses printed above.

“ The red lentil may be obtained of almost every corn chandler, at about 4d. per quart; the cost of a pound of *our* Ervalenta would be about 2d. per pound; and it is perfectly clear, from the analyses which we have given above, that whatever may be the advantages possessed by the much-vaunted Ervalentas, Revalentas, &c., that our article must contain them all.

“ 2nd Receipt.

Pea-flour,	2 lbs.
Indian corn-flour,	1 lb.
Salt,	3 oz.

Mix as before.

“ Being satisfied that lentils and peas do not differ in their properties to any great extent, we have devised the above receipt to meet those cases in which any difficulty may be met with in procuring the red lentil, which, however, is now very commonly kept by corn chandlers.

“ Whatever may be the results of the experience of others as to the advantages derived from the use of lentil-powder, we ourselves are unable to say very much in its favour.

“ We recently partook of some of Du Barry’s Revalenta Arabica, and found the flatulent effects so unpleasant that we should not readily be induced to repeat the experiment.

“ As treacle exerts a slightly aperient action when taken in considerable quantity, it may be used, if desired, with either of the ervalenta mixtures, the receipts for which we have given above; it has a great advantage over ‘Melasse’ and ‘Purified Syrup’ in price, costing only 4d. per pound.

“ In the course of our observations, we have had occasion to refer frequently to Du Barry and Co. The name of the person who represents Du Barry is Christian Klug, said to be a German Jew.”

In conclusion we have only to say, that Dr. Hassall’s book abounds in the most useful information for all classes of the public, whether professional or not; such a work should be taken up by the country, a condensation of it reprinted for general cheap circulation, and its author placed by the Government in such an independent position as to enable him to carry out, with the sanction of Parliamentary authority, inquiries here only commenced.

PART III.

MEDICAL MISCELLANY.

PROCEEDINGS OF THE DUBLIN OBSTETRICAL SOCIETY.

(Continued from p. 237.)

SESSION 1854-5.

THIRD MEETING, FEBRUARY 3, 1855.

DR. ATTHILL related the following case:

Some months since he was hastily summoned to see the wife of a respectable tradesman in this city, whose husband informed him had been seized with convulsions whilst she was standing behind the counter and engaged in a dispute with a customer. It appeared that in the act of speaking, and without any premonitory symptom whatever, she fell on the floor in a violent convulsive fit. Upon Dr. Atthill's arrival he found her just recovering from the third attack, about forty minutes from the first seizure. Her countenance was livid; face and extremities cold; pulse rapid and full; she was frothing at the mouth, and in a complete state of unconsciousness since the first fit. The patient was in the fifth month of her third pregnancy, and on inquiry it was found that her first labour was natural in every respect, and at full term; her second pregnancy terminated in a miscarriage at an early period, and on neither of these occasions, nor at any other period of her life, had she exhibited any tendency to epilepsy, hysteria, or any other form of disease of the nervous system. The fit, the termination of which Dr. Atthill had witnessed, was one of uncommon severity.

Chloroform was immediately sent for, and whilst waiting for its arrival the patient was bled, but with considerable difficulty on account of her very restless state; more than eight ounces of blood, however, were taken, although without any marked benefit. Another seizure appeared imminent just as the messenger arrived with the chloroform, which was immediately administered by inhalation,

and she was rapidly put under its influence. The extreme restlessness now subsided, and she breathed naturally. The inhalation of the drug was maintained for half an hour; when it was withdrawn, she seemed to rest quietly, and on visiting her two hours afterwards she was still sleeping. On the next visit, eleven hours after the first seizure, it was found that there had been no return of the fits, but she was still perfectly unconscious, and passed everything involuntarily. On the following day the patient's state was somewhat improved: she seemed partially conscious, and swallowed small quantities of fluid occasionally; she continued gradually to improve, and on the third day was able, though with some difficulty, to answer questions. She remembered nothing of what had passed from the first day of her illness, and complained of constant dull pain in the head, which, however, by degrees subsided, and she was soon convalescent. There had been no tendency to abortion. She went to her full term, and was delivered naturally.

Dr. Atthill then remarked that—"In this case there is some doubt as to the nature of these fits, occurring as they did in a pregnant woman; and having all the characters of puerperal convulsions, I treated them as such, and certainly with marked success; still, I am by no means sure that this would be a correct diagnosis, puerperal convulsions being very rare at so early a period of pregnancy, I never having seen a case where they occurred before the seventh month, nor have I met with any such case on record; besides, it is most unusual for a patient to be attacked with convulsions in a second or third pregnancy, when she had no tendency towards them in the first. I cannot look on this case as one of hysterical convulsions, the seizures being too severe; and besides, the total loss of consciousness for four days is, I think, conclusive evidence against such a diagnosis. Perhaps they were epileptic: if so this would be, so far as I am aware, the first case in which chloroform has been tried in that disease. Should further experience show that chloroform may be used in epilepsy with any prospect of success, it would be a great blessing to those afflicted with that disease, even though it afforded but temporary relief. There are, doubtless, certain forms of that disease to which it would be totally inapplicable, but perhaps in others it may prove beneficial. Bearing in mind, however, the very indefinite conclusion which was drawn from the results of the cases in which chloroform was used in puerperal convulsions, and which I laid before the Society last winter, I would be slow at drawing from this solitary case any decided inference; but I think the subject one worthy of farther consideration."

DR. HARDY brought forward a case which was attended with great obscurity, so as to render correct diagnosis extremely difficult: it was as follows:—

"Mrs. C., a school-mistress residing in the country, aged 28, two years married, gave birth to a child, which she nursed for a year; her health then declining, she was obliged to wean it. After weaning her child, she suffered for about three weeks from general

weakness, with occasional faintings, constant hemorrhage, bearing down, and severe uterine pain.

"On the 15th of April, 1854, she placed herself under my care: she had then excoriation of the os uteri, which was healed in little more than a fortnight; she returned to the country improved in health and strength for three weeks, and was free from pain; but again, hemorrhage, with occasional slimy discharge, came on, accompanied by violent heat and pain. On the 22nd of May there was difficulty experienced in passing water.

"On the 25th of May she returned to town. There was then distinctly to be felt above the pubis a firm irregular tumour, about as large as the uterus at five months of pregnancy. Internally the cervix uteri was occupied by a tumour fully as large and firm as a young child's head. The os was quite closed, and felt like a transverse slit looking backwards to the hollow of the sacrum. The anterior portion of the cervix felt as if drawn or distended over the tumour, which could be traced with the finger from behind the pubis in the same manner as over the head of a child, until the os was reached at the posterior part of the pelvis.

"I examined again several times, up to the 9th of June, at which date the tumour had increased so as to completely fill the pelvis, and the os uteri, which before looked towards the hollow of the sacrum, now lay directly behind the symphysis pubis, so that instead of the anterior lip and wall of the cervix being the part occupied by the tumour, it was the posterior which now projected and was passed over by the finger. By pressure I could not move the tumour upwards, it felt firmly fixed. The patient complained of pain of a grinding description, which came on at intervals, with general uneasiness. She did not at this time, nor from the commencement of her disease, suffer from any sickness of stomach, but flatulence was always very troublesome. On several occasions it was necessary to use the catheter because of pressure of the tumour against the urethra.

"On her arrival in town, three weeks after, the general distress was so great, and she experienced such weakness, that she was seldom able to leave her bed. About this time the bowels became relaxed, and copious discharges of thick slimy matter (according to the report of her sister, who was a nursetender) came away. This continued for about a week, when I again saw her; she had during the interval been rubbing ointment of hydriodate of potash over the seat of the tumour, namely the lower part of the abdomen, and had taken aperient pills, which had the effect of bringing away more of the discharge from the bowels above alluded to; she had besides a continuous green watery discharge from the vagina.

"The examination made on the 4th of July is noted as follows: The dimension of the tumour above the pubis is much diminished; in the vagina, it also feels to be much less. The shape of the cervix is not changed since last report, but the direction of the os is nearly vertically downwards, and not forwards, as formerly; pressure on the

tumour is not attended with pain; the uterus feels as firmly fixed as ever, and the general health is much improved.

" July 8th. The tumour was on a level with the upper edge of the pubis, of about the size of a large pessary, round and hard. The cervix was about an inch in length, and the os directed backwards to the hollow of the sacrum; pressure with the finger internally and over the pubis caused the uterus to move upwards and downwards in the vagina. The health and appearance of the patient was greatly improved.

" On August the 14th the uterus was of its natural size. The period at which the catamenia should have appeared had been passed a fortnight prior to this date, without any evidence of menstruation further than that pains were experienced, showing a disposition towards the performance of the proper functions of the uterus and ovaries. The cold hip-bath and friction, with the ointment of hydriodate of potash, were constantly employed, and under this treatment great improvement was evident.

" I received a letter from the patient, dated 17th August, 1854; she writes:—' I continue to improve and grow stronger every day; my regular change came on the day after I saw you (August 6); it continued for four days, and I felt nothing attending it more than on ordinary occasions. I continue the cold bath every morning, and have found much benefit from it; my appetite is good, and I feel as active and as strong as ever.'

" In considering this case it is important to attend to the dates, so as to observe its progress. The patient was in good health nearly all the time of nursing, but, like many mothers, persisted in suckling her child until forced by debility and declining health to wean it. When examined on the 15th of April the only thing discovered was slight excoriation of the os uteri, which very soon got well, and she returned to the country, where she remained until the 25th of May (not quite six weeks), and, as it appears by the report of her case, improved in health and strength for three weeks of that time. Consequently, it may be inferred that the amount of disease which was found on the 25th of May, developed itself in less than three weeks, or, making some allowance for slight inaccuracy in the report of the patient, it may have been in or about from three weeks to a month.

" From the 25th of May to the 9th of June (a fortnight), six weeks in all, the enlargement had attained its greatest size, and remained so until the 15th of June, when the discharge from the bowels took place; it then diminished, and in little more than a fortnight, namely, from the 15th of July to the 4th of August, all trace of it had disappeared.

" When this patient presented herself the second time for treatment, and the amount of enlargement above described was discovered, the first idea that struck me was that possibly I must have overlooked the nature of the case, and had not detected the great increase of size so evident at this time; however, I felt tolerably certain that it must not then have existed, and its future rapid progress convinced

me that in this opinion I was correct. The uneasy and painful sensations, which were so distressing, from pressure on the pelvic viscera, and occasionally, from this cause, the introduction of the catheter to empty the bladder being necessary, made me resolve upon pushing the tumour out of the pelvis, if possible, so as to make it occupy the abdominal cavity, and thus relieve the parts which were oppressed by its presence; but its fixedness rendered this impossible. It is very remarkable that the direction of the os uteri should have so suddenly changed its position from a direction towards the hollow of the sacrum to exactly an opposite one, viz., directly forwards. I was so struck with the change of its position that I asked Dr. Montgomery, who had seen the patient before, to examine the uterus. He informed me that he had never met with a similar case.

“ For some time I was in hopes that the os uteri might have dilated either to allow the escape of the growth or to admit the finger for the purpose of examining it. In this I was disappointed, as it never made the least attempt at dilatation.

“ We have heard of cases of polypi which were examined without the practitioner being able to detect anything; after sea-sickness the tumour which was contained in the uterine cavity descended, and was immediately detected by the next who made an examination, and who obtained the credit of discovering a disease which others had failed in doing. The present case seemed likely to be of a similar nature, but nothing of a polypus or any other excrescence whatever appeared.

“ The wasting and miserable state of the woman was most unpromising, and afforded great reason for looking to a very different result from that which followed. Between the loss of appetite, pain and uneasiness from the disease, and general debility, she was reduced to a state of great emaciation, which made the size of the abdomen appear the more remarkable, and afforded considerable facility in examining the state of the tumour; and this latter imparted to the touch the sensation of an enlarged uterus, more firm and irregular than in pregnancy, and about the magnitude of that organ at between four and five months of utero-gestation. Internally the cervix felt firm, as though not containing a tumour, but as if entering itself into its formation.

“ I have to regret that the discharges which came from the bowels when the subsidence of the tumour commenced were not kept, that I might have known their character: occurring at this particular time, it leads to the belief that in some manner the rapid diminution of size may have been effected by their elimination.

“ The treatment adopted consisted in such medicines as tended to improve the strength and appetite; sometimes anodynes were necessary to lull the pain; the hydriodate of potash ointment was the principal local application made use of; the friction exerted in applying it served not only to relieve the pain, but also to soften the tumour.

“ When the uterus had regained its natural size I was anxious that menstruation should be re-established, in order to show that the proper healthy condition of the organ had been restored. The sensations of the approaching period were well marked, and the appearance of the secretion completed all that could be desired as a most favourable termination to this remarkably interesting case.

“ Yesterday (February 2nd) I was informed by the sister of the patient that about two months ago her health was good, and menstruation took place regularly to the very day.”

FOURTH MEETING, MARCH 2ND, 1855.

DR. MCINTOCK gave the following report of the recent epidemic of puerperal fever, as it appeared in the Dublin Lying-in Hospital.

“ It is just ten years ago that I had the honour of reading before this Society the history of an epidemic of puerperal fever, which made its appearance in the wards of the hospital whilst I was an Assistant. I am sorry to have to say, that the same disease forms the subject of my present communication; and although these two epidemics which it has been my lot (may I not say ‘misfortune’?) to witness, did not present any very marked points of contrast or dissimilarity; still, I entertain the hope that a concise account of the recent visitation may not prove destitute of interest to the members of the Society. Indeed, if nothing else, it is of some importance to study the characters that disease puts on at distant intervals of time, —to observe the alterations in type manifested by the same structural lesions under epidemical or ‘constitutio anni’ influences.

“ Although more has been written upon puerperal fever than on any other subject of obstetric medicine, still there are many questions belonging to it that remain unsolved, and it offers difficulties and obscurities which we cannot, in the present state of our knowledge, get over or explain. If these obstacles are ever to be surmounted, it will not be by abstract reasoning, or hypothetical conjecture, but by careful deductions from a large accumulation of well-ascertained facts.

“ With this impression strong on my mind, I entered upon the task of collecting and arranging the materials which form the substance of this paper, endeavouring, to the best of my humble ability, to observe closely, to record faithfully, and to infer cautiously.

“ The epidemic, whose history I am about to bring forward, unequivocally declared itself in the first week of last December, and subsided in the middle of February. Unlike the one of 1845, its outbreak cannot be said to have been either sudden or unexpected, inasmuch as twelve or fourteen cases of puerperal peritonitis and phlebitis, together with a few isolated examples of typhus and scarlatina, had occurred in the house during the preceding nine months.

“ From the beginning of December to the 14th February, 182 women were confined in the hospital. This, I may just remark, is not half the average number of deliveries in the same period, and

was owing to a stop having been put, in the latter part of December and during all January, to the admission of patients, except such as were so near delivery that it would have been attended with imminent risk to send them away.

" Now of these 182 women, 38, that is 1 in every 5, were unequivocally affected with the symptoms of the disease; and out of these 38 so affected 17 recovered, and 21 died, making the proportion of fatalities nearly 1 in 8 of all admitted; a frightful rate of mortality, and more than tenfold the average of this hospital.

" In three of the above cases the puerperal disease was complicated with scarlatina. Two of these died, and the third made an excellent recovery, though the metritic attack was a marked one, and the scarlatina very severe, showing itself so early as the second day after delivery, and presenting in its course a truly formidable array of symptoms. On two occasions this woman seemed to owe her preservation solely to the liberal exhibition of wine and brandy, and this too at the very time when we had every reason to fear the existence of uterine inflammation.

" It would be wearisome and tedious were I to give the individual history of all these cases, and yet I am quite at a loss how to classify or arrange them, not knowing what to take as the basis of any such classification, as they presented considerable variety in their symptoms, course, and morbid appearances. For example, in many cases, including some of the most malignant, there was no initiatory rigor whatsoever. Again, intense abdominal pain was a prominent feature of some cases from the onset to the termination; whilst in others, equally fatal, there was *no* complaint of the belly. Vomiting, likewise, was an early and constant attendant upon the disease in not a few instances, whilst in some it did not appear at all, or only at the close. And so on with the morbid appearances; some cases presenting intense peritonitis, others phlebitis, and a few putrescence of the uterus, and these either separately or conjointly. There were two features, however, common to them all, namely, a very rapid circulation, the pulse ranging from 120 to 140, and a marked adynamic type; so marked, indeed, that in two cases only did I feel justified in making trial of phlebotomy, and these, as you may suppose, were selected cases. Yet, in each of them, the supervention of syncope rendered it necessary to discontinue the bleeding before ten ounces of blood had been abstracted, one losing about seven, and the other nine fluid ounces; and what is still more worthy of attention, is the fact, that in neither of these instances did the blood exhibit, after some hours standing, any of the characters indicative of inflammation. Both these patients died.

" In nothing did the various cases differ so much as the manner in which the disease made its invasion. In the majority a rigor announced its first onset, this being speedily followed by pain or uneasiness in the uterus; except in three or four instances, the pain was not by any means intolerable or severe at the commencement, or even for some hours afterwards. Tenderness of the uterus to

pressure, however, with perceptible augmentation of its bulk, was almost invariably found to be present from an early period of each case.

"The first approaches of the disease, when not ushered in by rigor, were sometimes remarkably slow and insidious,—the only deviations from normal convalescence being a trivial acceleration of the pulse and a slightly furred state of the tongue, with, perhaps, diminished secretion of milk. On two or three occasions the attack began apparently with after pains, or at least with pains of an intermitting character, commencing almost immediately after delivery, and so equivocal in their nature, that it was impossible to say when they ceased to be purely spasmodic and became inflammatory. Mr. Hey, of Leeds, in his Treatise on Puerperal Fever, makes the remark, 'that during the epidemic season lying-in women were unusually subject to after pains, and those of a more violent kind than ordinary.' My recent experience is quite in accordance with this observation.

"The patient's own representation of her state we found could not always be relied on, owing to her unconsciousness of the presence or the progress of the malady. Frequently her statements on this head, though made with confidence and complacency, were yet so utterly at variance with the symptoms and actual condition of the patient, that the most inexperienced observer could scarcely have been deceived by them for one moment. Whether this apparent ignorance of her real state arose from an unwillingness to believe she was affected with illness, or formed part of the disorder, I cannot take upon me to say; but certain it is that no less than four or five of these poor creatures have assured me, in language of gratitude and self-satisfaction, that they felt perfectly well, and this too when their general symptoms plainly forbade all hope of recovery.

"This complete unconsciousness of danger, however remote, at a time when the hand of death was almost upon the patient, was a curious and distressing feature of the disease; and is the more remarkable from the fact, that these women were apparently in full and perfect possession of their mental faculties. I have once or twice before observed the same in women dying of pure metro-phlebitis.

"Vomiting was not by any means a very prominent or constant symptom, except in the marked peritonitic cases; though in nearly all the fatal cases it came on some hours before death. Several of those who recovered had sickness of stomach, and a few of them even vomited large quantities of the dark-green tenacious fluid which has been aptly compared to green paint.

"Guided by the experience of this epidemic, I feel disposed to regard the state of the tongue as a more reliable prognostic than any other *single* symptom. With only one or two partial exceptions, I never saw a patient recover when the tongue had become dry, or brown, or glazed; I have observed this symptom before any of the others had assumed a mortal or even threatening character; nor was it absent in any of the fatal cases of the disease.

"At the outset of an attack the tongue was usually white, slightly furred, and somewhat less moist than natural. In many cases this state of the organ has been the very first symptom to excite alarm, and to apprise us of the coming storm.

"As the disease made progress, the next unfavourable change observed in the state of the tongue was a dry, brownish streak down its centre, and more remarkable towards the base. This condition gradually extended until the entire dorsal surface of the organ was involved.

"I think I am justified in asserting that the prevailing character of the tongue in the late epidemic was a close approximation to what is usually called the 'typhoid tongue,' and this is one symptom wherein it differed from the epidemic of 1845, in which the tongue presented most usually a broad, soft, creamy appearance. Mr. Hey, in his Account of the Puerperal Fever as it visited Leeds, makes the following remarks, which are pertinent to our present subject, as marking the contrast, in this symptom, between the two epidemics:—

"The tongue was never incrusted with the dry brown fur of typhus, except the disease was of long continuance, or had been improperly treated. It was generally moist and soft, and though it was not unfrequently covered with a thick white or brownish fur, yet it was often but little altered from its natural appearance to the last, even in bad cases."

"Diarrhoea was present in most of our cases, but was not so conspicuous or so formidable a complication as in the epidemic of 1845. I cannot but think that its first production was often attributable to the mercury and some of the other remedies which were used to subdue the disease; had it been otherwise, it is probable we should have experienced more difficulty in restraining it.

"Fulness of the belly, with tympanitis to a greater or less extent, was almost universal, but in the individual cases this condition did not become remarkable till an advanced stage of the complaint, except in those which showed from an early period a preponderance of the symptoms referable to inflammation of the peritoneum.

"The extreme rarity of cerebral disturbance in the course of puerperal fever is attested by nearly all observers, and the general tenor of my own experience agrees therewith. Nevertheless, I saw four cases which were exceptions to this rule. Two women, some hours after the first appearance of the disease, became quite lethargic, insomuch that it was only with great difficulty they could be roused to any degree of consciousness; and in this state, closely bordering on coma, they remained till their death, not many hours after. Another patient was affected in quite an opposite way. She was very restless and excited, wanting to get out of bed, and with difficulty restrained from doing so. Along with this she had a kind of noisy delirium, bearing a very close resemblance to one form of puerperal mania. These three women exhibited in a marked degree the same morbid appearance, namely putrescence of the in-

terior of the uterus and sloughing of the vagina. The fourth patient actually became maniacal three or four days after the development of puerperal fever. In the course of a week, however, she regained possession of her reason, but was very near dying of the puerperal fever.

"There seemed to exist throughout the epidemic a strong tendency to putrescence or sloughing of the uterus and vagina, and this, too, quite irrespective of the length or character of the labour. In six cases we had direct proof of the existence of this gangrenous condition; two of these were patients that recovered and had sloughing of the vagina.

"This constitutes an important feature in the late epidemic, and places it in strong contrast with the disease as it presented itself to Dr. Joseph Clarke and Dr. Collins; for neither of these authors make any mention of such having occurred in their experience.

"Dr. Collins, in describing the morbid changes which he met with in the uterus, as a result of puerperal fever, thus expresses himself:—'The uterus, in the great majority, was quite natural in appearance; in some it was soft and flabby; and in a few, unhealthy matter was found in the sinuses.'

"Elsewhere in his report he states that only one case of sloughing of the urethra occurred during his seven years' Mastership.

"Dr. Clarke, in his account of the epidemic of 1787-8, distinctly says that no unequivocal marks of putrescence in any part of the system appeared in the disease.

"It has already been stated that in every instance the pulse was found to be very rapid. At the commencement of an attack it was rarely below 112, occasionally much higher: and as the symptoms became more developed, and the disease made progress, the pulse commonly rose to 130, 140, and even 160. The other characters of the pulse were sufficiently remarkable to render them deserving of notice. In no one instance could we have applied to it the epithet 'incompressible; on the contrary, it was invariably soft and yielding, and gave to the finger a sensation that is best described by calling it 'liquid or undulating.'

"During the epidemic of 1845, and I believe in former epidemics also, trismus and convulsions prevailed to an unusual extent among the children born in the hospital. It is a fact, however, worth recording, that not a single example of either of these complaints presented itself during the entire period of the late visitation.

"It rarely happens that puerperal fever breaks out in the hospital without its contemporary appearance in private practice; and it never happens, I believe, that it prevails to any extent outside of the hospital without appearing among the patients within its walls. On the late occasion I had reason to know that several deaths had occurred from the disease amongst women confined at their own homes, and lacking neither comfort nor attention, before it visited the hospital. Nor since then were its ravages confined to the poor inmates of our wards; for many women among even the upper classes

of society were carried off under its fatal influence. During the months of December and January no less than twelve of such deaths, in and about Dublin, came to my own knowledge; and I have heard of four or five more occurring in the beginning of last month.

"On the outset of the fever in the hospital it displayed uncommon virulence, and the first seven patients who were attacked fell victims to its deadly malignity.

"It may not, perhaps, be uninteresting to mention the number attacked on different successive days, as marking, to a certain extent, the progress of the epidemic. Thus, on each of the following days, viz., the 1st, 3rd, 4th, 6th, 9th, 10th, 11th, and 12th of December, there was *one* woman seized with the disorder; *three* on the 13th; and *three* on the 15th: on no subsequent day of this month was there more than one; and on many days not one was attacked; but in February *two* were attacked on the 8th; *two* on the 9th; and *two* on the 10th.

"With respect to the period after delivery at which the patient was seized, the following are the general results:—2 were attacked in three hours from the completion of labour; 1 in four hours; 1 in twelve; 1 in fourteen; 1 in seventeen; and 1 in twenty-two hours. Each of these seven cases terminated fatally.

"I was seized in twenty-two hours after delivery, and 1 in twenty-three; the former recovered, and the latter died. Thus, we see, of 9 patients, in whom the complaint manifested itself on the first day of childbed, 8 died; 12 were affected on the second day, 6 of whom died; 10 were attacked on the third day, and of this number the disease proved fatal to 3.

"One woman, who was slowly recovering from an attack of scarlatina which came on soon after delivery, was seized with symptoms of peritonitis on the tenth day, under which she rapidly sank. There are yet five cases to be accounted for, but in these we could not fix the precise day on which the disease attacked them, so stealthy and imperceptible were its incipient advances.

"This low, insidious manner in which the disorder not unfrequently crept into the system, (if I may so say) taking hold upon the vitals without giving any unequivocal evidence of its presence, constitutes, I think, a remarkable feature of the epidemic, and places it in strong contrast with the epidemics described by Gordon, Hey, Armstrong, Joseph Clarke, Collins, and others.

"From Dr. Collins' report of the hospital it would appear that between one-third and one-fourth of all the patients admitted were primiparæ, and this exactly corresponds with Dr. Hardy's and my report. But amongst the patients attacked with puerperal fever, in the late epidemic, a much larger proportion than the above were confined of first children; in fact, 19, or one-half of the 38, had been pregnant for the first time. Curious to say, Dr. Collins' experience on this point is exactly the same as my own, for of his 88 cases of puerperal fever, 44, the one-half, we perceive, were women in their first labours.

“ Although I have not made it a matter of special statistical investigation, still I think I am correct in saying, that those women who were in bad health, or suffering any chronic complaint at the time of admission, as well as those who had tedious or difficult labours, were more liable than others to become the subjects of puerperal fever.

“ Dr. Joseph Clarke’s experience upon this point agrees with mine. He observes:—‘ Most of our patients attacked in the year 1787 were admitted in a weakly state, or had tedious and fatiguing labours.’

“ With reference to the important and much debated question of the contagiousness of puerperal fever, my late experience does not enable me to say anything decisive. Two facts, however, I may be permitted to mention as being, in some degree, relevant to this point. On four different occasions it happened that the two patients in adjoining beds were seized with the disorder. I do not attach any weight to this circumstance myself, but think it right to mention it.

“ The other fact easily admits of being construed into a proof of the contagious nature of the disease.

“ In two opposite wards (Nos. 7 and 8), on the same corridor, there were nine fatal cases, nearly one-half of the entire number of fatalities, and more than occurred in any other three wards. Now the only way in which I can account for this is, that a mother and daughter are respectively the nurses of these two wards, and having, on this account, more intercommunication, would be very likely to convey infection from one ward to the other.

“ The duration of the disease in individual cases varied a good deal. 1 patient died in fifty hours from the period of invasion; 1 in sixty hours; and 2 in seventy-two hours. These were our most rapid cases. Four or five days was the average length of time that patients lived after being seized with a fatal attack of the fever.

“ The influence of the seasons has been sometimes alluded to as a cause of childbed fever. In the ‘ Mémoires sur les Hôpitaux de Paris,’ M. Tenon has given a series of Tables exhibiting the number of births, and the mortality of lying-in women and children at the Hôtel Dieu, in the several months of each year of the decade from 1776 to 1786 inclusive. These statistics show December to be the most fatal month, and June, July, August, September, and October, the least so.

“ Of the mode of treatment pursued with the different patients who were attacked with the disease, I cannot here give a detailed account; but a brief outline of the general principles on which it was conducted, and of the comparative utility of the principal remedies employed, may prove not unacceptable to the Society.

“ I believe it may with truth be affirmed that bleeding, in this epidemic, was inadmissible. The only cases in which it was tried proved it so, and both of them died, the disease seeming to be wholly unaffected, if not aggravated, by the measure. My opinion on this point is not in the least shaken by the dictum of Gordon,—‘ That

puerperal fever is inflammatory at the commencement, and putrid only in its progress; backed though it be by the experience of Hey, Armstrong, and Professor Meigs, the latest and most voluminous author on puerperal fever. Gordon himself states, that unless he could abstract twenty-four ounces of blood at the first depletion he despaired of the patient's recovery; and this very statement explains the secret of his success. His cases were nearly all examples of the sthenic, synochal, sporadic form of the disease, which, as we all know, is by far the most manageable form. But the cases which would not bear bleeding, and which, in other words, approached to the low typhoid puerperal fever that is chiefly met with in hospitals, he found to be the most intractable and the most fatal. We find Dr. Meigs, too, saying, 'very few persons can be expected to survive these child-bed fever inflammations, whether accidental or unavoidable, when the circumstances forbid a resort to blood-letting.' In support of the supposition above thrown out, I would beg to draw attention to the significant fact, that each of these four authors, Gordon, Hey, Armstrong, and Meigs, the great champions for the lancet in the treatment of puerperal fever, derived their experience of the disease from *private practice*; and it is now well established that a strict parallel as to the mode and results of treatment can be rarely instituted between the disease as it presents itself in hospital and in general practice.

"To return, however; although general bleeding was found so wholly useless, yet local depletion deserves to be mentioned in more qualified, if not more encouraging terms.

"Most of our cases that recovered were leeched over the hypogastrium at the very beginning of the attack, and, so far as I am capable of judging, with decided benefit. No doubt the same means was likewise used with some that died; nevertheless, this does not alter my opinion.

"Epithems of spirits of turpentine, hot-water fomentations, and linseed-meal poultices, and hot salt, were external applications in constant use; and, though not in themselves of a powerful nature, were, nevertheless, found to be indispensable auxiliaries in the treatment.

"Mercury was tried in a large proportion of cases, and in various doses, but I cannot say I ever observed any decided improvement to have been traceable to its specific action on the system. In some instances the disease progressed with such frightful rapidity that absolutely there was not time for the drug to make an impression upon the constitution. In other cases the mercury seemed to produce diarrhoea, and had, therefore, to be laid aside. In two cases death occurred, notwithstanding that ptyalism had been excited. As a purgative it was in constant requisition, but always combined with, or followed by, other cathartics, and in this way it was found, as it always is, an efficient and useful agent. Many of our cases that recovered got repeated doses of calomel or blue pill, but in one instance only were the gums touched, so that if it cured the disease, it did so

without affecting the system. When exhibited with this intention, it was always combined with opium, and occasionally with camphor also.

“*Rectified oil of turpentine* is another remedy that was largely employed, but in only two, or at most in three cases, did it seem to have been decidedly productive of benefit, and in all these cases wine, and in two of them camphor, was given at the same time. Combined with an equal quantity (three or four drachms) of castor-oil, the turpentine proved to be a most valuable anti-flatulent purgative. On other occasions it was exhibited in one or two drachm doses every hour or second hour. It never sickened the stomach, and patients made no complaint of taking it.

“In one case I tried the *opium* treatment, giving a grain every hour till unequivocal indications of narcotism came on (which happened after six grains of the drug had been taken), but without any amelioration of the symptoms. This woman had been bled before the opium treatment commenced.

“If we might judge from this solitary instance, the disease in question does not seem to engender any very apparent tolerance to this medicine.

“*Wine* was allowed to all our cases; and in some from a very early period of the disorder. All the patients who recovered from a bad attack of the complaint got wine to the extent of eight, ten, or twelve fluid ounces in the twenty-four hours; and this from the second or third day of their illness. Some of them, too, got brandy along with the wine. In forming an estimate of the utility of this stimulant, I would wish to express myself with the strictest caution and reserve; but I can with truth say, that on no occasion did I see reason to regret its exhibition; whilst in some cases its good effects did not admit of doubt. If I had to encounter another outbreak of puerperal fever, similar to that just subsided, I should, with my present knowledge, give wine much more freely to my patients.

“After a calm and deliberate survey of the symptoms, treatment, and other attendant circumstances of the late epidemic—viewed in relation to this all-important question of treatment—the practical conclusion at which I arrive is embodied in this short precept:—To leech promptly—to purge actively—and to stimulate freely. Such, at least, are the leading principles that would guide me, and the treatment of all our successful cases was based upon them. In making this statement I am fully aware of the facts that the same line of treatment may not be adapted to different epidemics, or even to the same epidemic as treated in hospital and in private practice.

“The proportion of fatal cases in this epidemic is, I believe, somewhat below the average mortality in puerperal fever when occurring in hospital patients, 21 having died out of 38, which is exactly at the rate of 55 deaths per cent.^a If this result is in any

^a Thus, Dr. Joseph Clarke lost 21 out of 28 patients seized with puerperal fever in this hospital; Dr. Collins lost 56 out of 88; and Dr. Johnson 10 out of 14;

degree attributable (and I am far from asserting that it is so) to the treatment employed, I would feel inclined to ascribe it to the fact of stimulants having been systematically used from an earlier period of each individual case, and given with more freedom, than has been heretofore recommended by any author that I know of, excepting, perhaps, Dr. Copeland; and even he did not go beyond camphor and turpentine.

"It is but justice to remark here, that in adopting this, comparatively speaking, stimulant line of treatment, I only carried into effect a suggestion that had been previously thrown out by Dr. H. Kennedy, and which was embodied in a paper he read before this Society some years ago, wherein he traced a resemblance between puerperal fever and typhus, and referred them both to the same group or family of diseases^a.

"Subjoined are the histories of a few cases which will serve to illustrate some of those features of the epidemic that I have endeavoured to portray in the preceding observations.

"*Tedious Labour; Forceps; Puerperal Fever; Death.*—A. R., a large, corpulent woman, was delivered of her first child, with the forceps, on 12th December, 1854, in consequence of arrest of the head in the pelvis. The operation, which only lasted twenty-five minutes, was performed whilst she was under the influence of chloroform, and the child was extracted alive. Early on the morning of the third day she had a rigor followed by slight uterine pain and tenderness, and pulse at 120. She was bled from the arm in a sitting posture, but before ten ounces of blood had escaped, she became so faint that it was necessary to tie up the arm. This blood was carefully laid aside, and when examined twenty-four hours afterwards, did not present a single inflammatory character. The clot was large and soft, and everywhere in contact with the sides of the vessel; its surface was not in any degree concave, nor was there a trace of buffy coat. Two dozen leeches were subsequently applied to the hypogastric region, and she was put on the use of calomel and opium at short intervals. On the next day she was not better, and had a bad night; pulse 120; belly full and tender over the uterus; but she makes no complaint of pain unless when pressure is applied.

William Hunter, in his hospital practice, had 31 deaths out of 32 cases; and Dr. Leake, in the Westminster Lying-in Hospital, lost 13 out of 19 patients affected with this fever. Thus, to sum up, in 181 cases there were 131 deaths, which is at the rate of nearly 72½ per cent.

^a Since writing the above Dr. Sinclair has informed me that the mode of treatment pursued here in puerperal fever by my predecessor, Dr. Shekleton, differed in only one point from that above described: Dr. Shekleton did not purge as actively as I did. The results of his experience in the disease I do not know; but I am happy to be able to state, that a clinical report is in course of preparation, which will furnish us with full particulars, not alone on this point, but of the practice and statistics of the Hospital during the entire period of Dr. Shekleton's mastership. Such a work must prove of immense value. And I have no doubt but that the two gentlemen, Dr. E. B. Sinclair and Dr. George Johnston, to whose hands its preparation has been intrusted, will fulfil this duty in an able and efficient manner.

Another relay of leeches was put on, and the mercury continued. The symptoms, however, did not receive any check by this treatment, and she died on the eighth day. She was much harassed with vomiting for the last three days before her death, and the abdomen was greatly distended from meteorism, but she did not suffer from pain in the belly unless when pressure was made upon it. Mercurial ptyalism was induced in this woman. There was not a post-mortem examination of the body, but I had no doubt she died of peritonitis commencing in the uterus, and radiating from thence over the rest of the serous membrane.

“ *Natural Labour; Delirium; Gangræna Uteri; Death.*—M. K., a large fat woman, was confined of her first child, after a labour of twenty-four hours’ duration; but the second stage only lasted about a quarter of this time. She was delivered on the evening of 3rd Dec., 1854, and on the following morning her pulse was found to be rapid, and her countenance flushed. She got some calomel and Dover’s powder last night, and a dose of oil and turpentine this morning, which operated very well during the day, after which she got repeated doses of James’ and gray powders. This case subsequently ran a very rapid course, the prominent symptoms being a high degree of delirium, very much resembling mania, with an exceedingly rapid, feeble pulse, and a tumid, tympanitic abdomen, but without vomiting, or any complaint of abdominal pain. On examining the body the interior of the uterus and vagina presented one continuous slough.

“ This was a rapid case, and from the very first exhibited a strongly marked adynamic character. That the sloughing of the vagina was in no way due to the labour will be apparent from the fact that the membranes did not rupture until five hours before the birth of the child. This was one of the few cases of puerperal fever which presented any sensorial disturbance.

“ *Difficult Labour; Craniotomy; Death.*—In this case delivery had to be effected by means of the perforator and crotchet, in consequence of impaction of the head, and the rapid supervention of bad symptoms, although the entire length of the labour was only twenty-six hours.

“ M. M., the subject of the case, was a stout, healthy young woman, pregnant for the first time, and was delivered December 7, 1854. On the third day, at morning visit, the pulse was 120, small and weak; and the labia were enormously swollen, and presented on their internal surfaces gangrenous spots of an ash colour. She was lying in a stupid, lethargic state, from which she could with difficulty be roused to a sufficient degree of consciousness to protrude the tongue, and no more.

“ The abdomen was tumid and tympanitic; uterus very large. She expired some hours afterwards.

“ A post-mortem examination could not be made, but I have no doubt that we would have found the same appearances as in the case immediately preceding: indeed, we had positive evidence of the va-

gina being in a sloughy condition. The rather sudden occurrence of stupor, with partial obliteration of consciousness, were very remarkable features in this case.

“ *Natural Labour; Scarlatina; Metritis; Recovery.*—M. W., a strong, plethoric woman, aged 30, was delivered of her first child after a short and easy labour, on December 9, 1854. Scarlatina of a rather severe form appeared on the second day. The accompanying fever was high, nevertheless, she was going on pretty well up to the eighth day, at which time desquamation had commenced, when the pulse rose in frequency; the tongue became dry and furred; there was sickness of stomach, and pain and tenderness of the uterus, which felt greatly enlarged. Along with these alarming symptoms there was great prostration of strength.

“ In her condition the abstraction of blood seemed inadmissible: so the abdomen was, in the first instance, stupefied with turpentine; linseed-meal poultices were then applied, and renewed from time to time; and subsequently a large blister was put on. The bowels were acted upon by oil and turpentine; and she got small doses of calomel and James’ powder, with anodynes at night. Wine, and occasionally brandy, when she seemed very low, were exhibited. Under this treatment the symptoms of uterine inflammation slowly subsided, and eventually she made a very good recovery.

“ At the time this woman was seized with the symptoms of metritis, puerperal fever was prevailing to an alarming extent in the hospital. This was one of the first cases of puerperal fever in which I ventured to give wine; and the good effects resulting from its administration were most marked. I have already alluded to the case in reference to this particular feature of its history.

“ *Natural Labour; Phlebitis; Arthritis; Death.*—B. K. was delivered of her second child after a short and easy labour, on the 18th December, 1854. The foetus was small, about eighth month, hydrocephalic, and very putrid. At the moment of its expulsion a quantity of abominably fetid gas was remarked to escape from the vagina.

“ On the second day she had some slight tenderness over the uterus, without any acceleration of pulse, however. This was removed: a turpentine stupe and dose of castor-oil and turpentine. She was very well on the third and fourth days, the pulse being only 88; and no uneasiness whatsoever in the uterus; still, there was but a very scanty secretion of milk, and the tongue was somewhat dry towards the base in the median line. On the fifth day the pulse was 100; but she had no uterine uneasiness of any description, and expressed loud murmurs at not being allowed up. The next day brought no change in her condition; and on the day following (i. e. her seventh day) she was worse: the pulse was 110; the tongue dry and glazed; no abdominal pain or distress, but she complains of some pain in the ball of left great toe. On examining this, the metatarso-phalangeal joint was found swollen, and the integument of a shining bright red. On moving the toe or pressing the joint she evinced acute pain. She only lived to the morning of the eleventh

day, notwithstanding that she got wine and brandy pretty freely. For six hours before she died the pulse had entirely ceased in the arms, and the hands were red and cold; yet she retained her entire consciousness, was fully and acutely alive to all passing around her, and able to move and turn in bed without assistance. There was a sort of quickness and excitability in this woman's manner, during the last few days of her illness, that is the nearest thing I have seen to the 'hysteroidal excitement,' described by Professor Meigs as being a very characteristic attendant upon uterine phlebitis. This patient had no rigor.

"I regarded this case as an example of pure metro-phlebitis; indeed, the almost total absence of any inflammatory symptom would dispose one to believe that the blood had been poisoned by the *direct absorption* of some noxious matter from the interior of the uterus. The highly putrid state of the foetus, and the fact of an abominably offensive gas having followed its expulsion from the uterus, give an air of probability to this supposition. Unfortunately the body could not be examined.

"*Natural Labour; Puerperal Fever; Sloughing of Vagina; Recovery.*—M. C., a stout, very fat young woman, had a rigor on January 1, 1855, forty-one hours after delivery. She was a primipara, and her labour was natural and easy; the rigor was at 1 A. M., and was speedily succeeded by acute pain in the lower belly, making her cry out with agony; she got a draught containing two drachms of oil of turpentine and twenty-five minims of laudanum; two dozen leeches were also applied over the uterus. At 9 A. M. she felt much better; pulse 136 and soft; tongue rather dry and yellowish; headache; thirst; a linseed-meal poultice was directed to the abdomen, and a drachm of rectified oil of turpentine to be taken every second hour: this treatment, with the addition of an anodyne at bedtime, was continued for the next two days, during which her state was much the same as now described. On the evening of the fifth day the pulse was 118, soft and weak; she was vomiting much green fluid, and there were diarrhoea and retention of urine; the belly was tumid, and there was some slight tenderness on pressure being made over the uterus; the belly was ordered to be very well fomented with flannels wrung out of hot water, and then poulticed with linseed-meal; she got two grains of opium and eight of camphor, and she was allowed two ounces of brandy, diluted with water, in the course of the night. The day following she was a shade better, and the turpentine treatment was continued; she was allowed four ounces of sherry wine in the course of the day, and the same quantity for the night. On the evening of the seventh day a flocculent slough was discharged from the vagina, and was succeeded by two others at subsequent periods. A large patch of erysipelas appeared in the right iliac region on the eighth day; this remained stationary for some days, and then declined. Her pulse at this time (eighth day) was 116; some diarrhoea was present, and she frequently had sickness of stomach; the abdomen was still very full and tympanitic.

nitic, and the tongue red and dry. Her quantity of wine was now increased to ten ounces in the twenty-four hours; she was allowed strong beef tea, and was ordered five grains of camphor and five of Dover's powder thrice a day. On the ninth day the pulse was still 116, but the erysipelatous inflammation was decidedly less. Meat was now allowed her in the place of beef tea. She amended slowly from this time, and was put on the use of sulphate of quina on the twelfth day. From imprudence in getting up she had two relapses which considerably retarded her recovery, so that she was not discharged till the last day of the month.

"The patient who lay in the next bed to this woman was attacked some hours before her, with malignant puerperal fever that proved fatal in three days. She was twice leeched, and did not get any stimulants till a late period of the disease, too late indeed to be of any service. This omission I much regretted, seeing the good effect they had on the patient whose case I have just related.

"*Natural Labour; Puerperal Fever; Recovery.*—A. K. was delivered of her first child January 6th, 1855, after a short and easy labour. On the second day the pulse was 140; the uterus large, hard, and extremely tender to pressure, and she was teased with a frequent cough; twenty leeches were applied over the uterus, followed by a poultice of linseed-meal, and she was ordered pills of calomel, morphia, and ipecacuanha every second hour. She expressed herself much better next day, and had no pain in the uterus unless when it was pressed upon; the pulse was 120, and the bowels free. On the evening of the fifth day the pulse was 120; she complained of occasional pains in the belly; was teased with hiccup, and vomited her drink; pills were now stopped, and she was ordered two drachms of oil of turpentine, and two scruples of acetum opii, and to have three ounces of wine during the night. Her state during her eighth and ninth days seemed very critical, and such as almost to shut out the hopes of recovery. She had frequent hiccup, occasional vomiting, diarrhoea, a tense, tympanitic belly, and dry red tongue; along with these unfavourable symptoms the pulse ranged from 124 to 134, and was small and weak. One feature there was, however, to relieve this dark picture: she was invariably cheerful, and perfectly sanguine as to her recovery. Her allowance of wine was increased to eight ounces in the twenty-four hours; the belly was well rubbed with a strong turpentine liniment, and she was ordered pills of quina, camphor, and opium, every third hour. The next day her pulse was 110, but she still had vomiting, and the tongue was very red; she was allowed a mutton chop, wine, and pills as before; a turpentine enema was also administered with the long tube, and it brought away a good deal of flatus. A very decided improvement had manifested itself by the twelfth day, and the pulse had come down to 108. At this time she was getting sixteen ounces of wine in the twenty-four hours, a mutton chop for dinner, and the pills of quina, camphor, and opium. From this

date her recovery progressed most favourably, and she was discharged on her twenty-second day.

“ There was no rigor in this case, nor did she even complain of much pain or uneasiness in the abdomen. This latter is not, however, to be always regarded as a favourable symptom, as some of the most malignant cases were quite free from abdominal pain.

“ *Natural Labour; Puerperal Fever; Recovery.*—E. B., a stout, coarse-looking young woman, was confined of her first child on January 13th, 1855; her labour was rapid and easy. Thirty-nine hours after delivery, and when she was apparently going on as well as possible, she got a very severe rigor: this occurred at half-past 10 o'clock. P. M. A bag of hot salt was immediately put on the belly, and in two hours afterwards thirty leeches were applied, as she complained of great pain and extreme tenderness over the uterus; a linseed-meal poultice succeeded the leeches; she got two drachms of turpentine, and half a drachm of tincture of opium; her pulse next morning was 92, very soft and weak; tongue white; uterus large and somewhat tender; appears heavy and dull; she got some aperient medicine this morning, which operated briskly on the bowels; she was allowed some wine and beef tea, and ordered a drachm of turpentine, with four minims of the vinegar of opium, every second hour; a poultice to the belly. After this she was going on very well till the evening of the fifth day, when she had a smart rigor, followed by a rise in the pulse from 90 to 118. She now got two drachms of turpentine, and forty drops of solution of acetate of morphia (about two-thirds of a grain of the salt); and a linseed-meal poultice was put on the belly. She had a good night, and although the uterus next day was still large and tender, and the lochia almost entirely suppressed, still the pulse was only 88. A large, warm cataplasm was again applied over the belly, and she was ordered five grains of Dover's powder and five of camphor three times in the day; and to have beef tea and some sherry wine (four ounces). She gave us no anxiety after this, as her recovery proceeded without interruption.

“ In the preceding histories I have purposely been as brief as possible, my chief object being, not to give the details of each case, but merely its salient features.

“ It affords me much pleasure, in concluding this paper, to bear testimony to the zeal and alacrity evinced by the two assistants, Dr. W. B. Jennings and Dr. George Montgomery, in rendering that close and constant attention to the sick which is so needful during an epidemic of puerperal fever, and without which the best directed treatment must prove unavailing.”

TRANSACTIONS OF THE COUNTY AND CITY OF CORK
MEDICAL AND SURGICAL SOCIETY.

NOVEMBER 8TH, 1854.

E. R. TOWNSEND, M. D., PRESIDENT, in the Chair.

Jugular Pulsation ; Diminution of the Right Ventricular Cavity of the Heart ; Atrophy of its Parietes.—Dr. POPHAM exhibited the heart of a patient who had a remarkable turgescence of the right cervical veins, with strong pulsation. As the morbid changes observed in the heart were different from those usually found in such cases, he thought the novel features which the present, though but a single case, presented, might throw light upon some of the causes of venous pulsation.

Catherine Sullivan, aged 34, was admitted into the North Infirmary, under his care, on the 8th August, 1854. She stated that her illness began about seven months ago, when she was delivered of a still-born child in a state of decomposition. She first noticed a swelling in her feet, then palpitation came on upon the slightest exertion. On admission, the inferior extremities were anasarcaous, the face puffy and strikingly anemic. The abdomen was not much enlarged, but the liver was found to extend far beyond its normal limits, filling the epigastrium and passing across to the left side and downwards within an inch of the umbilicus ; its margin, hard and rounded off, could be traced through the abdominal walls, though some fluid intervened. She suffered greatly from dyspnea ; being unable to retain any posture much longer than ten minutes ; decubitus on the left side or back was impossible, she was mostly in the semi-erect position. Pulse 96 to 108, small ; respiration quick ; bronchial rales heard over the chest. But the most striking symptom in her case was a distinct pulsation in the cervical veins at the right side, so strongly marked as to catch the eye of a person entering the ward. The maximum pulsation was at the junction of the subclavian with the internal jugular, but it extended above the middle of the neck. On placing the finger upon the jugular vein, a little above the sternal articulation, the upper portion became turgescent, but ceased to pulsate ; on transferring the finger to the superior part of the vein, the portion intercepted between it and the clavicle became flaccid, but throbbed vehemently. The pulsation presented little regularity of rhythm, resembling more a muscular subsultus than a steady stroke ; neither was it synchronous with the systole of the ventricle, beating two or three times during one pulse of the radial artery. A slight throb was distinguishable by the finger lightly applied, but neither impulse nor sound was detected by auscultation. This pulsation of the jugular continued unchanged till a few days before death, when it

gradually declined, and finally disappeared about forty-eight hours before her decease. A systolic bruit taking the place of the first sound was heard in the epigastrium and lower left costal cartilages, and a slight undulating movement was visible between the cartilages of the third and fourth left ribs. The urine was albuminous. She died August 27.

On examination, general anasarca existed; the muscular tissue was pale and emaciated. In the right pleura about a quart of yellow serum was found; the right lung was considerably congested, especially the upper lobe, the left was not so much affected. The external and internal jugular veins of the right side were largely dilated and somewhat contorted; the left not much changed; the superior vena cava was enlarged and distended with dark fluid blood. The heart weighed eight ounces; the left ventricle was dilated and hypertrophied, measuring, when laid open, $3\frac{1}{2}$ inches from the margin of the aortic valves to the apex, 3 inches in the transverse diameter; the thickest portion of the walls was seven lines. The right ventricle was greatly diminished in its capacity, and its walls were atrophied; its cavity was so much contracted that it could not contain half an ounce of fluid, and the thickest part of its walls was only one line and a half. The pulmonary artery was narrower than the aorta, still, not to such a degree as to cause any great obstruction; measured across the valves, the circumference was $2\frac{3}{4}$ inches, which about two inches higher up the vessel contracted to 2 inches 1 line; the aorta was $2\frac{1}{4}$ inches in circumference; the valves of both were perfect; the lining membrane of the aorta was atheromatous; the mitral valve was of normal size; the tricuspid opening measured one inch and 1 line in its long diameter, and 10 lines in its transverse; the right auricle was dilated and slightly hypertrophied. The liver was greatly enlarged and exhibited the nutmeg appearance; it was gorged with dark blood; the gall-bladder was distended with green bile. About three or four pints of serum were found in the peritoneum; no adhesions existed. The spleen was hepatalized; the left kidney was much shrunken.

The preceding case, Dr. Popham observed, formed an exception to the usual pathological changes witnessed in jugular pulsation, and hence presented a difficulty of explanation by the theory generally advanced. In the great majority of cases where pulsation occurs in the cervical veins, obstructions of a very decided character to the free passage of the blood from the right ventricle to the left are found to exist: for instance, obstructive disease of the valves of the pulmonary artery; contraction of its tubes, diseases of the lung tissue, or extrinsic pressure sufficient to produce a considerable and permanent *remora* of blood in the lungs; and constriction of the left auriculo-ventricular valves. One or more of these elements is ordinarily found associated with jugular pulsation when it is permanent, and not arising from temporary causes, and it is natural to inquire how far they exist in the preceding case. Of the four causes mentioned, two, namely, constriction of the mitral or obstruction of the

pulmonary valve, did not occur; of the other two, the caliber of the pulmonary artery was somewhat less than the normal standard, and considerable congestion was found in the lungs; still, on a close examination, neither of these causes existed to such a degree as to account for the present very marked case; a similar amount of lesion occurring in numerous instances familiar to most observers where no venous pulsation whatever has been noticed. Besides, if an impediment existed *a parte ante* to the passage of the blood, we would naturally expect the ventricular walls to adapt themselves to overcome it, and dilatation of them with hypertrophy to be the natural result. But in the present example, directly the reverse conditions were found: namely, diminution of the capacity of the ventricle and an enfeebled state of its walls, and therefore the causes did not exist which produce enlargement of the tricuspid orifice, such as a dilatation sufficiently ample to draw asunder the curtains of the valve, until they ceased to meet and confine the blood. It is not so easy to suggest an explanation of the present case which may prove satisfactory. In the ordinary examples of venous pulsation, where we find an augmented cavity capable of holding more blood than in the normal state, it is not difficult to understand that when the hypertrophied walls contract strongly upon their contents and meet with resistance in front, rupture might ensue, did not the safety-valve function of the tricuspid orifice give way. But here we have a ventricle of small capacity not allowing the normal amount of blood to enter from the auricle, and a debilitated condition of its muscular structure scarcely sufficient to project even this small quantity forward, so that a portion of the normal quantity of the blood must remain in the right auricle, and at each auricular contraction this complemental portion, being stopped in its onward course, must be driven in a retrograde direction up the vena cava and its tributaries, producing a venous pulse. By this means the auricle would remedy to a certain extent the incompetence of the ventricle, and the absence of valves in the vena cava would allow a reflucent current. It is also to be observed that the want of synchronism between the contraction of the ventricles and the pulsation in the veins in the above case countenances this explanation; in the usual examples the jugular pulse occurring at the same time with the ventricular systole. Hence it seems not irrational to conclude that a venous pulse not in unison with the contraction of the ventricles is due more to *auricular* than *ventricular* action. It might be alleged that an enfeebled condition of the muscular structure of the ventricles, such as occurs in fatty degeneration, might, by imperfectly closing the tricuspid valves, operate as a cause of regurgitation; but in such a case we could hardly expect to find a strong venous pulse arising from feeble contractile efforts. Dr. Popham concluded by observing that two opposite conditions of the ventricle may accompany venous pulsation: one in which it receives, but cannot transmit, the full complement of blood from impediments to its onward course, in

which the cause of the pulsation is to be looked for in regurgitations from the ventricle; the other when the cavity is not capacious enough to receive the normal amount, in which the contraction of the *auricle* seems to produce the pulsation. However the matter may be explained, the fact is undoubted, and may at least give rise to a question whether the causes of this peculiarity have been as yet wholly explained.

JANUARY 24TH, 1855.

PROFESSOR O'CONNOR in the Chair.

An interesting Case of Small Stomach. By W. H. SANDHAM, late Medical Officer of the Dunbullogue and Whitechurch Dispensary, and Rathcooney Fever Hospital.—Mrs. B., aged 58, married, and had several children, became the subject of a coroner's inquisition, in consequence of her having stated, when dying, that she considered the cause of her death was a blow received from her husband in the stomach the previous Christmas. Having attended her a few days before death, as well as the previous summer, the husband insisted on my being summoned to the inquiry. (Dr. Fowler was examined before I was sent for.) Having stated that I had no doubt there was some serious organic disease of the stomach, and that a post-mortem examination would throw light on the subject, an autopsy was ordered.

Symptoms.—The most marked symptoms present when I attended her before death were, extreme emaciation of the whole body, and a sallow, leaden cast of countenance, leading one to suppose she must be the subject of some scirrhouous or cancerous disease; vomiting of anything taken into the stomach, and occasionally a distressing, lancinating pain, which she described as if a blunt knife was suddenly thrust through the organ and as suddenly withdrawn. On examining the seat of the disease immediately after taking drink, a swelling or tumour was perceptible in the region of the stomach, to which a considerable pulsation was communicated by the abdominal aorta. By gentle pressure or friction, this tumour could be emptied of its contents, which led one to suppose that there was a sac or cavity external to the stomach, with which the latter communicated, so that when the tumour was pressed on, its contents appeared to pass back again into the stomach. Her intellect was perfect to the end.

Autopsy.—On making the necessary incisions through the abdominal parietes, the scalpel appeared as if cutting through a piece of thin sole leather well hammered. On exposing the viscera and viewing them *in situ*, no trace of a stomach was perceptible; the intestines were beautifully transparent and pale; the liver was healthy, but small, and its left lobe completely concealed all that remained of a stomach. On passing the hand up under the left lobe of the liver, I found something tucked up tight against the diaphragm,

which, when drawn into view, had no resemblance to a human stomach. It had all the appearance of a piece of large intestine of about four inches long, and an inch or an inch and a half in diameter; its coats thickened, and indurated; along the whole of the inferior,—or what ought to have been the convex edge,—a semi-cartilaginous process extended, from which, at right angles and equidistant from each other, passed off six ribs or processes, three anteriorly, three posteriorly, which terminated in fine points, without meeting at the superior or concave edge. These processes kept the organ permanently open, and any fluid taken must have immediately passed through it. The pyloric extremity was particularly thickened, and near the pyloric orifice was a tumour projecting inwards, about the size of a pigeon's egg, of a scirrhouss hardness, which appeared to be the nucleus of the disease. The internal surface was perfectly smooth, and over the whole of the organ there was not the trace of a vessel carrying red blood. This state of things was confined to the stomach alone. On slitting it open it was perfectly empty, and could not contain more than two or three ounces of fluid.

The tumour which appeared after taking drink must have been caused by the transverse colon being drawn up after the stomach, so as to occupy its place; the aorta pulsating beneath was perfectly healthy.

FEBRUARY 14TH, 1855.

E. R. TOWNSEND, M. D., PRESIDENT, in the Chair.

Pneumothorax.—PROFESSOR O'CONNOR exhibited a lung, and detailed the history of a case of pneumothorax.—John Duggan, aged 30, of full habit of body, but of scrofulous, leuco-phlegmatic appearance, was an inmate of the Cork Workhouse Hospital for several months, labouring under chronic ophthalmia. The glands of his neck were swollen, and appeared to have undergone suppuration at some former period of his life; with this exception he was, up to the time of his last illness, in very good health.

Having assisted in raising a heavy load, he was attacked on the following day with pain in his back, attended with cough and difficult breathing. On examining his chest I found dulness over the inferior portion of the right lung, both anteriorly and posteriorly, with bronchial breathing and crepitating rale, but not coextensive with the dulness.

Imagining the case to be one of ordinary pneumonia (which was prevalent at this period), I put him under treatment for this disease. On examining him the following day I was much surprised to find the most perfect specimen I had ever heard of amphoric breathing and vocal resonance over the upper portion of the right side, more especially anteriorly. On percussion the upper parts of the chest were clear, but not to any remarkable degree. At this time there were great dyspnœa, quick pulse, pallid features, frequent

cough without any expectoration, and the pain which first drew attention to the case still continued.

Having assured myself, by most minute inquiries, that he had never before laboured under pulmonary disease, I found it difficult to account for the existence of air in what was manifestly a large cavity. On the following day I found that the patient had expectorated an enormous quantity of sero-purulent fluid, which came up on coughing with very little difficulty. His breathing at this time became still more hurried, and he could not assume the upright position without danger of suffocation. The amphoric breathing and vocal resonance were increased over the upper part of the right side; and dulness on percussion, with hoarse bronchial breathing, still continued over the lower portion of the same side. The dyspnœa continuing to increase, the patient expired on the evening of the third day from the commencement of the attack.

Post-Mortem.—On cutting through the ribs, a jet of air escaped from the right pleural cavity; the lung was collapsed in its upper two-thirds, and lay close to the spine; the lower third was adherent to the ribs and diaphragm by false membrane of very recent formation; the collapsed lung and ribs were also lined with it; the detached part of the pleura was about one-third filled with serous fluid, a little turbid, and containing flocculi of lymph. On removing the lung and examining its surface I could find no appearance of a fistulous opening into any portion of it; it was also free from tubercular deposit; the whole substance of the lung, however, was condensed, the upper part by the pressure of air and fluid, the lower by inflammation; the bronchial glands were enlarged, and must have been the seat of former disease, as some of them had undergone cretaceous degeneration, and there was loss of substance in the right bronchus, which must have been the seat of an ulcer long since healed.

On exhibiting the preparation to my class at the Queen's College, and removing the larger portions of false membrane investing the lung, I was still unable to discover any communication between the lung and pleura. However, on placing the lung in water for two or three days, I discovered a small opening at the lower part of the upper third of the lung, through which a grain of wheat might pass. On passing a probe into this opening I found it to communicate with a small cavity about half an inch in depth, from which, on pressure, a small quantity of a grumous, bloody discharge oozed out, which must have been the result of an apoplectic clot, as there was in no other portion of the lung any sign of suppuration.

In laying the preparation before the Society, Dr. O'Connor observed, that the diagnosis of the case presented unusual difficulties. The previous history of the patient rendered it certain that the cavity in which the amphoric resonance and breathing were heard did not exist in the lungs; and it was not probable that in a case in which tubercular cavities did not exist, a fistulous communication could

be formed between the pleural cavity and a bronchial tube. This case was rendered more obscure by the adhesion of the lung in its lower third to the thoracic parietes, over which bronchial breathing was heard at all times, and vocal vibration was felt, negativing the presence of pleuritic effusion in this its most usual situation. The existence of the effusion at the right side, as well as the manner in which it was circumscribed, deprived us of the evidence which a displacement of other viscera would have afforded. If succussion could have been practised without great distress to the patient, it would probably have removed the obscurity which existed in the case. He also called attention to the quantity of sero-purulent fluid expectorated the day before the patient's death, which still was not evidence of a fistulous communication, if we are to rely on the cases related by Andral, in which the contents of the pleural cavity passed into the lungs by a species of endosmose, and was expectorated in a manner similar to what occurred in the present case. But the point which he deemed to be of greatest interest was the light which this case threw on the rather doubtful statements of some authors, that air is sometimes formed spontaneously in the cavity of the pleura. By the most careful examination he could make, in the first instance, he was not able to discover the fistulous opening in the pleura, which was only apparent after the preparation had been in water for a couple of days; and it is not too much to suppose that a similar opening might have escaped observation in the very few cases recorded in which air was stated to be found in the pleura without such an opening having been discovered. In the last few hours of life, when the respiration is very feeble, and air ceases to pass through the opening, it becomes closed up by false membranes, so as sometimes to escape even a most careful scrutiny.

MARCH 14TH, 1855.

E. R. TOWNSEND, M.D., PRESIDENT, in the Chair.

DR. CUMMINS exhibited a cast, and made the following remarks. M. L., aged 65, has had umbilical hernia for the last forty years, which has latterly been of large size, and produced much inconvenience, not only by its bulk, but by occasionally causing fits of vomiting and cramps. On the 4th of February she discharged her ordinary duties (one of which was carrying a large vessel of water) in her usual health and spirits; that night she was attacked with vomiting and cramps in the abdomen and lower extremities, which continued up to the time of my visit, the morning of the 5th.

On examination I found an enormous umbilical hernia, very tympanitic, and quite irreducible; no tenderness on pressure over either the tumour or abdomen; tongue clean; pulse slightly accelerated and weak; bowels open. The matters vomited had been thrown out previous to my arrival, but they were described as having presented nothing unusual.

As the symptoms were not in any way urgent, I left her, promising to call again in the afternoon; when I returned, I was surprised to hear that she was dead.

The attendants informed me that both cramps and vomiting had ceased shortly after I left her, and had not returned; she lay without suffering for about two hours, asked for a drink, which she swallowed without difficulty, and almost immediately after expired.

My friend, Dr. H. Hobart, was kind enough to make a cast of the tumour after death: it measured 27 inches in circumference at the base, 13 inches from above downwards, and $14\frac{1}{2}$ inches from side to side; at its upper surface is a transverse furrow, which divides it into two unequal portions, the upper of which appears to contain the duodenum. Unfortunately, I was unable to obtain a post-mortem examination, so that all remarks must be to a certain extent hypothetical.

I was unable to find out whether the tumour had materially increased in size prior to the invasion of the last attack of vomiting and cramps, but whether this was the case or not, it must then have become incarcerated. Now, symptoms of incarceration had frequently occurred on previous occasions, which had spontaneously ceased, and admitted of the free passage to and fro of the intestinal contents. On this occasion, however, the obstacle to their passage was more permanent, still, I think the period of its existence was too short to admit of our attributing the death to this cause alone, as simple obstruction high up in the intestinal canal must be sufficiently long in existence to produce symptoms of inanition before it can cause death. The gut may have been strangulated, although there was no symptom of strangulation present except such as it shares with simple incarceration; but however this may have been, I think strangulation could hardly have been the cause of death, for the patient died about twelve or fourteen hours after the vomiting had commenced, and we know that either incarceration or strangulation of the duodenum or upper part of jejunum cannot exist many hours without the supervention of vomiting; so that neither of these lesions could have been present much longer than fourteen hours, a time insufficient to produce any of the ordinary modes of death from strangulated hernia. It may be said, however, that a low form of peritonitis was present without the woman being aware of it some time before the vomiting commenced; but a peritonitis caused by strangulation could not have been antecedent to the strangulation itself, and a peritonitis capable of destroying life in a few hours would certainly have been marked by at least some symptom of inflammation.

If then the immediate cause of death in this case was not such as is usually the result of hernia, we must draw from its peculiarities a conjecture as to what caused the fatal termination.

I believe there are few cases on record of a hernia having attained the enormous bulk which this tumour presented; it must have con-

tained nearly half the abdominal viscera; and situated as it was in the neighbourhood of the great semilunar ganglion, we can easily understand the cause of the violent cramps which were suffered from, and which directed our attention to the probability of an impression having been produced by the tumour on the nervous system, and thus being the immediate cause of death.

The imbibition of a large draught of cold water in certain states of the system may cause a tonic spasm of the heart, by producing an impression through the semilunar ganglion on the nervous system. Could the drink which this patient swallowed immediately before her death have produced a similar effect in the then state of her system? There is another way in which death may have been produced through an impression on the nervous system. The displacement of so many important viscera, whether strangulated or not, may have caused a collapse, such as sometimes supervenes upon the evacuation of the fluid in ascites; but as there were no symptoms of collapse when I saw the patient a few hours before her death, and as the tumour had been in existence for so many years, I think the former explanation more probable.

The rapid and unexpected fatal termination of this case points out the necessity of timely interference in incarcerated umbilical hernia, when of large size, and the danger of postponing operative proceedings even where the symptoms are not urgent.

I may be wrong in my views of the cause of death, but the same lesson of promptitude in operating on such cases, after a fair trial of the taxis, is taught by this case, even if strangulation was the immediate cause of dissolution.

Case of Latent Subacute Peritonitis. By CHARLES ARMSTRONG, M. D.—William V., aged 8, of leuco-phlegmatic temperament, and strumous diathesis, who hitherto enjoyed uninterrupted health, was observed to be generally unwell for a considerable time, though without making any complaint, the symptom which chiefly arrested the mother's attention being 'occasional shivering.' She first became alarmed on observing a considerable increase of the abdomen, when I was sent for. He then had a wiry pulse of 112, with tongue furred and white towards the base; the rest red and smooth, presenting the 'beefsteak character;' bowels very inactive, with ill-conditioned discharges; abdomen greatly enlarged, and giving no pain, except slightly, on pressure, in the left hypochondrium, and near the epigastrium, in which localities were detected two tumours, quite distinct one from the other.

Under the influence of active purgatives, aided by turpentine enemas, &c., enormous quantities of ill-conditioned matter were brought off; the urine became a little more abundant, and was found to possess an acid reaction, with no indication of an albuminous character. In consequence of no steady improvement taking place, I obtained the assistance of Professor Harvey, who, in two or three

days, expressed his suspicion as to the existence of chronic peritonitis, and suggested the propriety of trying the dermoid application of diuretics, as recommended by Christison,—the application consisting of equal parts of tincture of squills, tincture of digitalis, and soap liniment, two teaspoonfuls of which were rubbed into the abdomen night and morning: this had been preceded and was still accompanied by mercury, chalk and powdered squill, and followed up till salivation was slightly indicated, which occurred seventeen days after commencing Christison's liniment. Notwithstanding this steady perseverance in the liniment, no alteration was produced in the urine; whereupon we administered infusion of broom tops and liquor potassæ, shortly after which the urine became abundant, accompanied by a decrease in size of the abdomen. At the end of another week the tongue had nearly lost its 'beefsteak' character, while the alvine and urinary secretions were greatly improved: the circulation, however, was rapid and wiry, emaciation becoming very manifest.

Ten days subsequently we discontinued Christison's liniment, without in any way altering the character of the urine; we, however, continued the *internal* use of diuretics for nearly three weeks, and though the urinary secretion was then so healthy as to admit of laying aside all diuretic treatment, the general state of the child was worse. We here tried cod-liver oil, which could not be borne by the stomach; we, therefore, applied it externally, two tablespoonfuls of it being rubbed into the abdomen three times a day,—our attention having been called to this mode of treatment by an article in the Medical Press, wherein the external use of cod-liver oil is strongly recommended by Dr. Simpson of Edinburgh, and Dr. Theophilus Thompson.

In the present instance it was of no avail, for the child became worse, and died, after being nearly three months under treatment.

Autopsy, forty-eight hours after death.—Emaciation extreme; several ecchymosed patches over the body and extremities; abdominal muscles in the epigastrium and left hypochondriac regions, the seats of the tumours, rapidly decomposing; while the other muscles presented no such appearance. On opening the abdomen the entire peritoneum, which contained two or three pints of fluid, presented an enormous mass of chronic disease and vascularity, and was completely studded over with quantities of lymph, which, glueing the intestines, formed a mass so confused as to render it very difficult to distinguish one intestine from the other. The chief amount of disease existed in the epigastrium and left hypochondrium, where were found two solid masses of lymph, constituting the tumours so manifest during life. The liver was partially studded with scrofulous deposition. We were not allowed to examine the other viscera.

In this case a fair trial was given to the dermoid application of diuretics, which treatment was borrowed by Christison from a paper he read in a French periodical some years previously. 'At that

time,' observes Christison, 'I had under my charge a boy, aged 10, who had laboured under simple ascites; that is, without any œdema, even in the limbs, for a period of five or six months, during which the effusion had slowly and steadily increased, notwithstanding the employment of brisk purgatives, various powerful diuretics, and mercurial action. There was great difficulty in referring this affection to any particular organic disease; but, on the whole, a previous chronic peritonitis was suspected to be the cause. When he came under my care purgatives and diuretics internally were again tried, and especially digitalis and squill, but with no better success than before. On the contrary, the enlargement and tension of the belly became gradually very great, so that the boy was confined in a great measure to bed. The French suggestion came, therefore, most opportunely, and was rubbed freely and diligently into the skin of the belly morning and evening. At an early period, so early, if I do not mistake, as the beginning of the third day, the urine began, for the first time, to increase; by and by a copious flow was established; the ascites quickly subsided, and in about fourteen days entirely disappeared; the boy, at the same time, gained flesh and strength under the use of simple bitters and chalybeates, and ere long his health was completely restored. When I last heard of him, four or five years afterwards, he continued well and strong.'

The feature of peculiar interest in the present case arises from the fact, that such an immense extent of disease could have existed accompanied by little or no pain, and be so masked as to leave any doubt of its nature and extent. In the Dublin Quarterly Journal for February last, we find an admirable article by Dr. Law, headed, 'Pathological Affections and Relations of False Membranes,' where some excellent observations are made, applicable to the present case, and in which he writes:—'Serous membranes are peculiarly susceptible of inflammation. They exhibit this susceptibility more strikingly than any other structure or tissue in the animal body; with, perhaps, the single exception of their kindred structure,—areolar tissue. This fact is attested both by living and posthumous proof, exhibited in the frequency with which the practical physician meets with cases of peritonitis, pleuritis, pericarditis, and arachnitis; and in the still greater frequency with which, in his post-mortem examinations, he finds unlooked-for traces of inflammation of this tissue, whose existence, in many instances, had never been suspected during life.'

In the same excellent article Dr. Law enters into the anatomy and physiology of 'False Membranes,' the result of serous inflammation, for the investigation of which the present case afforded a favourable opportunity; it, however, being one in private life, precluded the possibility of anything beyond a hurried post-mortem examination.

MARCH 28TH, 1855.

E. R. TOWNSEND, M. D., PRESIDENT, in the Chair.

Extensive Heart Disease; Strong Jugular Pulsation.—DR. HARVEY exhibited the heart of a woman named Draddy, aged about forty-five years, who had laboured under a complicated heart affection for several years, and to which had been added ascites for more than a year before her death.

When admitted into the South Infirmary, she complained of palpitation, inability for exertion, and great coldness, with occasional purple colour of the extremities; but until within a few days of her death there was little distress of breathing. Occasionally the face and upper parts had a bloated appearance, but this was not constant; and throughout there was little œdema of the feet, or of the body generally. She had been tapped several times before admission, and the operation was repeated once or twice while she was in hospital; the fluid being limpid and straw-coloured, and without flocculi.

The action of the heart was strong and rather tumultuous, and the impulse was diffused and extended a good deal towards the right side, but all regular rhythm was gone, and it was next to impossible to distinguish or appreciate any separate sounds; the motions gave rather the impression of extensive pericardial adhesion than of anything else. Towards the end of her life, a sound resembling regurgitant auriculo-ventricular murmur was occasionally heard. The pulse was uniformly miserably small and weak; in fact, it was imperceptible in the right wrist, and scarcely to be felt in the left; and with this state of arterial circulation, there was constant and great jugular turgescence extending to the angle of the jaw at either side, with strong pulsation, which appeared to be synchronous with the ventricular systole. This pulsation was not only visible but was also felt as a strong beat in the entire course of the veins: they pushed asunder the finger and thumb when applied at either side of the vessel, with considerable force. There was also some pulsation observable in the temples.

On examination the heart was found free in the pericardium, but it had two white patches on its surface; it was somewhat enlarged, and had a full deposit of fat. Right auricle and ventricle were considerably dilated; the latter, perhaps, somewhat hypertrophied also; and the tricuspid opening very large, allowing of very free regurgitation. The valvular structure here, as well as at the base of the pulmonary artery, was healthy, but in the pulmonary artery itself there was a considerable quantity of atheromatous deposit, and the caliber of the vessel was decidedly contracted in addition. Left auricle did not present any thing remarkable, but the mitral valve was much thickened and hardened, and the opening so closed as to admit of a very small current only into the ventricle. The cavity of this last chamber was rather small, and its muscular structure little, if at

all, increased. Semilunar valves and aorta healthy. No change was observed in jugular or innominate veins or superior cava.

The lungs did not present the least appearance of congestion or other abnormal condition. The liver might be said to be in an incipient degree of nutmeg degeneration, but there was not sufficient structural change to lead us to attribute the ascites to it as a cause. There was no vascularity of the peritoneum.

Dr. Harvey remarked that it was not to be expected so great a disturbance of the circulation should be dependent on any single lesion. The examination in this case disclosed a series of such, all tending to impede the forward current, and to overload the tributaries to the heart. The case was interesting taken in connexion with others, and particularly with one recently brought before the Association by Dr. Popham, as showing that jugular pulsation may exist with different, and even opposite states of individual parts. So far as he (Dr. Harvey) had been able to observe, he was disposed to conclude that the turgescence in these cases might result from any cause or causes offering impediment to the onward flow of the blood, whether in the right or left cavities; and that pulsation required, in addition, conditions admitting of a more ready communication of the cardiac impulse in the retrograde than in the direct course. Dilatation of the right cavities, and insufficiency of the tricuspid, with or without hypertrophy of either, would seem to be adequate to its production, especially if other impediments to free transmission should coexist.

To what are we to attribute the ascites? Obstructed portal circulation is commonly admitted as a cause of this form of dropsy. Pressure on the ascending cava might act similarly by opposing the free return of blood to the heart; but mitral contraction obstructing the stream at a point somewhat more remote, does not appear even to have been recognised as acting on the same principle; and yet it might be questioned whether the closely contracted mitral orifice in this case, aided by the other agencies, which combined to impede the free unloading of the venous system, may not have had some share in the production of the abdominal dropsy.

On Paracentesis of the Pericardium. By Dr. A. TROUSSEAU, Professor of Clinical Medicine to the Faculty of Medicine of Paris; Physician to the Hôtel Dieu: and Dr. CHARLES LASEGUE, Supplementary Professor to the Faculty of Medicine of Paris; Physician to the Hospitals.

WHEN the question of employing paracentesis in thoracic effusions was agitated, the operation was considered by authors to be exempt from serious risks, long before any one ventured to try it. The numerous cases of recovery from penetrating wounds of the chest encouraged surgeons; a single difficulty deterred them—the uncertainty of the diagnosis. During many ages almost all eminent men

agreed in theoretically recommending thoracentesis; they voted in favour of puncture, the utility and safety of which they proved by incontestable arguments, without, however, bringing themselves to put in practice their own precepts.

Whatever hesitation there might have been on this point, thoracentesis was at least justified by a number of speculative considerations; the same was not the case with respect to the puncture of the pericardium. To entertain the idea of bringing a cutting instrument near so delicate an organ as the heart appeared to be inexcusable temerity: *Intrepido opus est animo ad talem operationem instituendam*, said Richter. Van Swieten, who was little inclined to shrink from venturesome remedies in cases of extreme peril, is not more confident: *Quam audax facinus debet videri omnibus si quis cogitaret de pertundendo pericardio dum hydropo turget*. More recent writers exhibit the same dread: perhaps, until within these few years, we should not find a work the author of which would have the courage to patronize the puncture of the pericardium. It is a curious spectacle, but one of which science furnishes many examples, to see an operation all the conditions of which have been discussed, and its minute details carefully described, while we are dissuaded from ever putting it in practice, and while not even a single case is known in which it has been tried.

The impossibility, acknowledged by all physicians, of establishing a positive diagnosis of pericardial effusion, must have had its part in producing this rejection of the operation. The knowledge of the signs of this disease is of recent date; and if there still remain, under certain circumstances, legitimate doubts, no means formerly existed of arriving at anything like certainty. To be convinced of this, we need only glance over the treatises anterior to that of Laennec; in all, the writers agree in avowing their ignorance, and the insufficiency of the received symptoms. From the memorable discussion into which Morgagni enters so fully in his sixteenth letter; from the immortal treatise of Senac to Corvisart and Kreysig, we find none but the loosest ideas. Syncope, faintness, pain, dyspnoea, œdema, are nearly all the recognised signs of the affection; when authors endeavour to emerge from these generalities, they fall into subtleties, which nevertheless are handed down, for want of better, like the sensation of a swimming heart invented by Reimann, or even like the fluctuation of which Senac speaks when he says: "When palpitations come on, the undulations of the water contained in the pericardium are very plainly perceived between the third, fourth, and fifth ribs." Even Laennec thus expresses himself: "I think I may assert, that effusions in the pericardium, which are not abundant (those under a pound, for example), will never give any sign, and that probably we shall never be able to recognise any except those which are much more considerable; but I think that those which exceed two or three pounds may be occasionally diagnosed, by means of the signs afforded by percussion, auscultation, and inspection."

We do not propose here to enter into the history of acute or chronic inflammation of the pericardium, and of the effusions to which they give rise; still less do we propose to describe the signs by which the presence of fluid is to be recognised, and from which, consequently, the indication of paracentesis is to be deduced; our intention is merely to collect the few statements which relate to this operation, adding thereto the little that we have derived from our personal experience.

The idea of puncturing the pericardium dates probably from a very early period; it is to Senac that the honour of having expressly laid it down is generally ascribed. In the chapter, in other respects so remarkable, in which he treats of pericarditis, and of dropsy of the pericardium, this author declares that if the existence of the disease could be proved, the resource which would appear the least uncertain would be the puncture, or rather the trepanning, of the sternum. Riolan had already expressed the same view^a. It is surprising that Laennec should have attributed to Senac an opinion which the latter had opposed. "I do not think," observes Laennec, "that it would be necessary to employ the puncture between the cartilages and the ribs, as Senac advised; the most useful and least dangerous operation we could adopt would be to trepan the sternum above the xiphoid appendix." The illustrious author of "Mediate Auscultation" not only misunderstood the text of the writer whom he quotes, but he borrows from Senac himself all the arguments in virtue of which trepanning appears to him to be preferable.

Senac never performed paracentesis of the pericardium, although some compilers have stated that he did so. Desault, whose authority is quoted, was not more fortunate; the effusion he wished to evacuate by puncture was not situated in the pericardium. The following is the case, as it is recorded with a simplicity which is full of frankness, in the surgical works collected by Bichat^b.

CASE I.—If you venture on paracentesis, never employ the trocar, as Senac recommends; incision with the bistoury is always preferable. A man applied at the Hôpital de la Charité with all the characteristic signs of dropsy of the pericardium: dry cough; difficulty of breathing; a slow, hard, and irregular pulse; uneasiness; anxiety; danger of suffocation in the recumbent position; decided relief from standing; frequent fainting fits; the face pale and bloated; evident dilatation of the precordial region; a constant tendency to incline to the left side. Such were the phenomena presented by the patient.

Desbois, Sue, Dumangin, and Desault, having met in consultation on this case, did not at first agree as to the cause on which these symptoms depended. Some referred them to a disease of the heart, others to hydrothorax, others to a collection of fluid in the pericardium; finally they fixed on the two latter, between which

^a *Enchiridion Anat.*, Book III.

^b Tome ii., 1798.

opinions the consultants were equally divided. Desault proposed an operation suitable to either case, viz., to make an opening into the chest between the sixth and seventh ribs of the left side, over the apex of the heart, dividing the skin, the aponeurosis between the external, oblique, and great pectoral muscles, and the plane of the intercostals; this plan was adopted, and was next day put in execution.

The incision having been made with the requisite precautions, Desault introduced his fingers into the thorax, and felt a kind of sac full of fluid, which he considered to be the pericardium; the other surgeons having likewise examined the parts were of the same opinion. He therefore, with a blunt bistoury, opened the distended sac, and gave vent to about a pint of water, which escaped with a kind of sibilation at each expiration. When the flow had ceased, the finger, introduced once more into the opening, felt a smooth, pointed, conical body striking against it: all present felt it, and the general opinion was, that it was the naked heart.

The symptoms were mitigated during the first two days after the operation, but they returned with increased intensity on the third, and on the fourth the patient died. On examining the body a membrane was found connecting the edge of the left lung to the pericardium, and forming the sac which was mistaken for and opened as this membrane. The conical and pointed body supposed to have been the naked heart was in fact that organ, but enveloped in the pericardium, to which it was in great part adherent; it was also much more than ordinarily dilated, and was filled with blackish and partly coagulated blood.

This case, recorded by Desault, and usually quoted as the earliest example of paracentesis of the pericardium, does, therefore, not deserve to figure in the history of this operation, and can be cited only as an additional instance of the obscurity of the diagnosis. Larrey's case is not more conclusive, although it also is brought forward^a; we shall merely recapitulate its most striking points.

CASE II.—A foot chasseur of the Guard, aged 30, was brought to hospital with a penetrating wound of the thorax, which had divided the cartilage of the fifth rib, and was the result of an attempt at suicide: there was acute pain in the wound; the pulse was small; there was dyspnoea. On the eleventh day after the accident, a variety of treatment having in the meantime been employed, the dyspnoea was extreme; the pulsations of the heart were almost imperceptible. Opinions were divided between an effusion into the pleura or into the pericardium: Larrey adopted the latter diagnosis for reasons which, in the present day, would appear but little conclusive. In the particular case we are quoting, Larrey thought he perceived the undulation or fluctuation described by Senac, and

^a On a wound of the pericardium followed by hydro-pericardium (*Bulletin des Sciences Médicales*, 1810).

which he was surprised not to find verified by any author; he, moreover, noted the disappearance of the palpitations of the heart, and determined, on these indications, to perform the operation.

An incision having been made between the fifth and sixth ribs, a serous fluid escaped, in a very abundant and rapid stream. The operator introduced his finger into the wound, and felt the point of the heart. During the operation the patient experienced dreadful agony, and was near dying. Upwards of a quart of fluid was drawn off; at the end of two or three days the pulsations of the heart were again perceived.

Ten days after the puncture the symptoms reappeared in as menacing a form; the pellicle of adhesion of the first wound was opened with a probe, and issue given to a sanguineous purulent matter; the contact of the probe with the heart again gave rise to the most fearful anguish; notwithstanding, a notable amelioration ensued, and the man's health was likely to be re-established, when he died, on the 21st of May, of a fit of indigestion. The date of the attempt at suicide was the 18th of March in the same year.

On post-mortem examination was found a thick sac or cyst, distinct from the pericardium, and badly described by the author; the left lung was compressed and adherent to the pleura. Larrey, while he acknowledges that the pericardium was not the seat of the effusion, as it was adherent to the heart, supposes that this membrane, at first distended by the fluid, was really opened by the bistoury, and that in collapsing it left in the mediastinum a space in which this sac or cyst was subsequently formed.

However they be explained, these two cases of so-called paracentesis of the pericardium, in each of which there was incontestibly an error in diagnosis, and both of which terminated in death, do not advance the question. Matters accordingly remained in the same position, and, if we except the interesting memoir in which Skjelderup undertakes the defence of the puncture of the pericardium without adducing facts in support of it^a, the operation relapsed into oblivion, or was thoroughly condemned. Corvisart, who, in his edition of 1806, was satisfied with quoting Desault's observation, in a subsequent edition does not propose paracentesis, but states that in case any surgeon should venture to try it, he should prefer incision with the bistoury to puncture with the trocar (1818).

Kreysig^b expresses himself as follows: "It is scarcely possible that this operation should be employed; in addition to the fact of the disease being of such a nature that puncture could be of little use, we should always have to dread consecutive carditis and its inevitable consequences; the introduction of air would produce a fatal suppuration." Like his contemporaries, he adds that the means of diagnosis are insufficient even to justify such rashness.

^a De Trepanatione ossis sterni et apertura pericardii (Acta nova Societatis medicinæ, Havn., 1818).

^b Die Krankheiten des Herzens: Berlin, 1816.

Such was the state of science when Schuh, one of the principal physicians of the Vienna Hospital, published a remarkable work, entitled, "On the Influence which Percussion and Auscultation are destined to exercise on Practical Surgery." He passed in review the services rendered by these two novel methods, and applied himself especially to setting forth the security which an almost absolute certainty of diagnosis should hereafter offer to the surgeon. Effusions of the pleura and pericardium were cited as the most striking examples; and he concluded by declaring that, for his part, he would not hesitate, if the case should occur, in trying paracentesis of either^a.

An opportunity was not long in presenting itself: it was in the Vienna Hospital that the first puncture of the pericardium took place. The case observed in the Clinique of Professor Skoda has not, so far as we know, been published in France, and it deserves to be reproduced *in extenso*. It is interesting not only in reference to the particular subject on which we are at present engaged, but also because it affords an example of an affection rare both in its seat, its nature, and its mode of development.

CASE III.^b—A woman, aged 24, a servant, was admitted on the 22nd July, 1840, into the clinical wards, having been transferred from another division of the General Hospital, where she had been under treatment for fourteen days; there was no accurate information as to the commencement of her disease, which appeared to be of about two months' standing. During the last three weeks the patient had been deprived of sleep, and the dyspnoea was so great that she could only breathe in the erect position; her face, feet, and hands were œdematos; there was ascites; percussion gave a dull sound under the entire sternum and both sides of the bone, to the distance of half an inch above, and an inch below; beneath the right clavicle and along the scapula, as far as the axilla, the sound was clear, almost tympanitic; from the axilla to the inferior boundary of the thorax there was dulness; under the left clavicle, the sound was clear and likewise almost tympanitic; the rest of the left side, both anteriorly and posteriorly, was dull, except at the upper part, where the resonance was better; the pulsations of the heart were not perceptible; the sounds were almost inaudible; at most, a very slight rubbing sound was heard at the inferior extremity of the sternum, and was dependent on the movements of the organ; the pulse was 120, small; in the upper half of the chest the respiration was vesicular and puerile; at the left posteriorly there were bronchial respiration and bronchophony; the tongue was clean; there was intense thirst; no appetite; the urine was scanty and high-coloured; the catamenia had been suppressed since the commencement of the illness.

Diagnosis.—Considerable effusion into the pericardium having

^a Ueber den Einfluss der Percussion, &c. (Öster. Med. Jahrb., vol. xxiv. 1839).

^b Österreichisches Medicinisches Jahrbuch, New Series, vol. xxv. 1841.

supervened on an attack of pericarditis, also into both pleuræ, the œdema and ascites are consequent on the effusion into the pericardium and pleuræ; the effusion into the pleura is itself, perhaps, consecutive to that into the pericardium; the valves of the heart are in their normal condition; the inferior half of both lungs is compressed by the fluid.

After such a diagnosis, the evacuation of the fluid contained in the pericardium was the only chance of saving the patient; the remedies most clearly indicated had already been unsuccessfully employed for fourteen days; no better course remained; the œdema was progressing; not only was the operation necessary, but it was urgently demanded, each moment's delay being liable to produce fatal suffocation.

On the 24th of July the operation was performed by Dr. Schuh. It is close to the left edge of the sternum, in the space between the third and fourth ribs, that the operator is sure of penetrating, by a perpendicular puncture, into the cavity of the pericardium; we thus reach the origin of the great arteries, while we run the least possible danger of wounding the heart; the vessels are kept at a sufficient distance by the fluid, and there is no fear of wounding the internal mammary artery. The puncture was made in this point directly with a trocar, and without previous incision of the skin; we hoped that the contraction of the distended pericardium would suffice to determine the expulsion of a part of the fluid. On introducing a canula the pulsations of a large artery were felt; there was no room to doubt that we had really penetrated the cavity of the pericardium, and still, only a small quantity of a syrup-like and sanguineous serosity was discharged. The canula was withdrawn after prolonged and useless attempts, and we decided on making a new opening in the next inferior intercostal space. Very little fluid at first flowed off; soon the discharge became more considerable; and at length we obtained a certain quantity of reddish serosity. The fluid was expelled chiefly by the movements of the heart, and was ejected at each systole of the ventricles. We induced the patient to hold in her breath and to make an effort; the result of this manœuvre was a more violent jet, but with the inspiration succeeding to this momentary tension, air entered the pericardium. We had not at hand a pump adapted to remove the fluid. We made the patient change her position, but the discharge then ceased altogether; the canula was withdrawn, although percussion showed very extensive dulness in the region of the heart.

The operation was followed by immediate relief: the patient could lie down by keeping the head elevated; she slept for the first time for three weeks, and the sleep continued all day, and almost all night.

From the next day, we observed with surprise a remarkable diminution of the œdema of the limbs; the impulse of the heart was appreciable; the sounds were distinct and unattended with frottement; the two little wounds caused but trifling pain, and did not

induce the least inflammatory reaction; the amendment progressed with extreme rapidity. We examined the chest every day, and noted the quantity of fluid contained in the pericardium and the pleurae. The entire of the effusion was absorbed at the end of a month; the respiration had again become free; on the right side there was frottement perceptible even on the application of the hand, and so intense that the patient herself was conscious of its existence. The dimensions of the pericardium, estimated from the extent of the dulness, continued greater than in the normal state. The patient appeared to be on the verge of recovery; she regained her strength and flesh; her appetite was excellent, when, without any known cause, she complained of pains at the upper end of the sternum and in the neck. Some days later the cervical ganglions increased in size, and an elastic tumour formed at the superior extremity of the sternum. The tumour extended; it seemed to take its origin from the periosteum, and in two points there was an indistinct fluctuation; the skin became red without undergoing any other change. In the tumour, and also at each side of it, an impulse was perceived corresponding to the ventricular systole; a dull murmur was heard on auscultation; the cardiac sounds were scarcely audible; nothing more was heard at each systole than a short and indistinct souffle.

In proportion as the tumour enlarged, an acute and circumscribed pain set in in a point in its vicinity; the painful part became swollen, and in a few days coalesced with the principal tumour. Local bleedings, the application of ice, mercurial frictions, the external application of iodide of potassium, the internal employment of iodine in various forms, Zittmann's decoction, &c., were tried without the least success. A puncture made in the point of fluctuation showed that there was no fluid; it healed quickly enough, but seemed to hasten the development of the tumour.

By degrees almost the entire of the sternum from top to bottom, the costal cartilages, the extremities of the ribs and of the clavicles, invaded by the tumour, which had acquired the thickness of an inch, disappeared. The impulse of the heart was no longer perceptible in any point; the souffle had ceased, and the cardiac sounds had again become tolerably distinct. Occasionally the shock of the heart was indistinctly felt. The patient, with the exception of intermittent attacks of pain, continued pretty well until the latter half of November; she got up, did not feel much fatigued, slept quietly, preserved some appearance of *embonpoint*; her face had a look of health; menstruation was still suspended. Towards the middle of November the tumour increased in size; it evidently compressed the trachea: respiration became difficult; a tiresome cough supervened; and the most intense fits brought on frequent vomitings. In December the only nourishment she could take was a little soup; the swallowing of liquids was painful; her cough increased; the attacks of vomiting returned several times a day; the emaciation became extreme, and the patient, reduced to the state of a skeleton,

died on the 6th of January, 1841. Death was preceded by coma of a few hours' duration. The rhythm of the heart had not altered during the entire course of her illness; the pulse had, since the appearance of the tumour, rarely been below 120; at the end it was much more frequent.

Autopsy.—The tumour consisted of a grayish-yellow mass of lardaceous consistence, which had attacked and metamorphosed the sternum, the inner part of the four upper ribs, and of the clavicle; the portions of the bones which remained were exfoliated. All the mediastinum, to the thickness of six inches, was filled with the same production which was attached to the vertebræ, especially those of the right side, was strongly adherent to the lungs, and enveloped the great vessels, the trachea, &c. The diameter of the ascending aorta was reduced to half an inch; the trachea was contracted and compressed, there were firm adhesions between both lungs and the costal parietes; the lungs were exsanguine, infiltrated with serosity and encephaloid matter, especially the upper lobe of the right side; the pleura and the external part of the pericardium were studded with flakes of the same nature. The pericardium, through the intervention of a dense areolar tissue, was adherent to the heart; this organ itself was displaced downwards and backwards; it was of the normal size. The walls of the ventricles were the seat of encephaloid deposits, of the size of a hazel-nut; there was similar lesion of the endocardium, and of the valves which acted regularly. Deposits of a similar nature were found in the peritoneum, the liver, and the stomach; there was no other change worthy of note.

Professor Skoda makes some remarks on this case, which is interesting in more than one point of view. He attributes the pericarditis and the pleurisy to the presence of this foreign matter, which, being gradually deposited, did not at first induce serious disturbance of the health. The cavity contained more fluid than was evacuated by the puncture. The surplus was subsequently absorbed, probably under the influence of the development of the tumour. Phenomena would thus have taken place similar to those we observe in certain chronic pleurisies, which disappear in proportion as the lung becomes infiltrated with tubercles.

With respect to paracentesis of the pericardium, the first attempt was tolerably encouraging. The first puncture had evidently penetrated the mass which filled the mediastinum, and could not give vent to fluid. The second succeeded better, but was attended with relief of but short duration, and of almost questionable value, when we recollect the scarcely impartial anxiety with which the results of such operations are canvassed. As an operative proceeding, the paracentesis was performed without formal preparation or special instruments, without precautions of any kind, and its perfect harmlessness was fully proved. Even this is a considerable acquisition to our knowledge, it is an important step in advance to have dissipated apprehension by proving, by a decisive experiment, that

puncture of the pericardium is not to be added to the list of those rash attempts which even success can scarcely justify.

Two years later, a pupil of the learned Vienna professor published in the same Journal another case, in which the hydro-pericardium appeared free from such rare complications, but combined with other pathological states which more commonly coexist with this disease. We shall reproduce the case, merely abridging some prolixities, and without suppressing anything which appears to us to be of the least importance^a.

CASE IV.—The subject of this observation was a shoemaker, aged 19. The disease for which he came into hospital was of about seven weeks' standing; he complained of dyspnœa, which, though slight at first, had become so intense that on the day of his admission (1st July, 1841), he was near suffocating.

The following was his state at the period of his reception into the division of the hospital specially reserved for diseases of the chest: the face was pale, a little œdematos, and expressive of anguish; the respiration was short, quick, painful, and panting. The patient preserved the semi-erect position; if he attempted to turn to the left he was attacked with stitch in the side, and the dyspnœa became aggravated; there was expectoration of a thick and yellowish mucus. On percussion there was complete dulness under the entire sternum, extending beyond its right border in the anterior portion of the left side of the thorax from the second rib to the epigastric region, and laterally from the left edge of the sternum for an extent of six inches; the sound was clear below the left clavicle, along the scapula, and in the axilla; posteriorly on the same side it was tympanitic. Throughout the anterior portion of the right side, as far as the sixth rib, the sound was clear; laterally it was dull from the fourth rib. Posteriorly the dulness increased as the examination was carried downwards towards the lower part of the right side; there was tympanitic resonance on the left; there was protuberance of the liver, which descended two fingers' breadth into the hypochondrium; the precordial region was arched.

The impulse of the heart was imperceptible; the cardiac sounds were very obscure; a rubbing sound, almost masked by the mucous rales, could with difficulty be heard in the inferior part of the sternal region. Throughout the left portion of the chest the respiration was impetuous, and accompanied by mucous and sibilant rales; on the right there were large mucous rales inferiorly and anteriorly; posteriorly there was no respiratory sound.

The tongue was foul; there was but little appetite, scarcely any thirst; the heat of the skin was normal; the urine was scanty and high-coloured; there was neither diarrœa nor constipation; the pulse was 112, small and irregular; there was a feeling of oppression at the epigastrium; there was pain in the precordial region when the patient lay on the left side.

^a *Öster. Med. Jahrb.* New Series, vol. xxix., 1842.

Diagnosis.—Considerable effusion into the pericardium, the result of an attack of pericarditis, and compressing the lower lobe of the left lung; scanty effusion into the right pleura, with infiltration of the pulmonary parenchyma consecutive on pleuro-pneumonia; general bronchitis.

The most energetic means were employed to procure the absorption of the liquid, and were productive of some relief; the pulse became less irregular. Percussion showed that the infiltration of the lower lobe of the right lung was less, the hydro-pericardium, on the other hand, was not diminished; the patient was emaciating. Mercurial preparations, which had afforded the most favourable results, were unsuccessfully pushed to the largest doses, and caused neither diarrhoea nor salivation.

On the 3rd of August the commencement of ascites was observed; it was determined to puncture the pericardium, and the operation was performed by Dr. Heger on the morning of the fifth of the same month. A point was selected in the fifth intercostal space, about two inches from the left edge of the sternum, where the rubbing sound was not heard, and where less risk was incurred of wounding the internal mammary artery and the great vessels; about three drachms of a reddish serosity slowly flowed off. Neither the introduction of a probe nor the application of an exhausting pump succeeded in rendering the jet continuous; a more decided flow was obtained by causing the patient to retain the air in his chest and to make an effort, and by pressing strongly with the hand upon the epigastrium. It was only under the impulse of the systole that the fluid was ejected in a jet. The entire of the serosity thus obtained, which was tolerably clear and of a reddish-brown colour, the latter portions being flaky, amounted to upwards of 48 ounces (1500 grammes). During the operation the pulse was 112, and small; the rubbing of the heart on the canula was at times perceived; not a bubble of air entered the pericardium. Almost immediately after the puncture there was remarkable relief; the diaphragm reascended, the vaulting of the precordial region was less; the sound was more clear in the second intercostal space, and along the external edge of the scapula; the frottement had disappeared. Nevertheless, the dulness led the attendants to suppose that probably about 24 ounces (700 to 800 grammes) of fluid still remained; the wound was covered with diachylon, and compresses soaked in iced water were applied to the side, in order to prevent too great a reaction.

At 3 o'clock in the afternoon there was shivering, with acceleration of the respiration; the pulse was 104; there was no cough. The night was uneasy: there was cough, with slight pain in the wound.

On the 6th the respiration was short and quick; there were fits of coughing, with mucous expectoration; constipation; pulse 112; dulness of the lower third of the left side of the chest; numerous subcrepitating rales; sound of frottement in the lower portion of the sternum. The patient was bled in order to relieve the pneumonia

of the left lobe; the blood was highly cupped and buffed. The pericardial effusion increased up to the 10th of August; the dulness in the second intercostal space returned; the frottement disappeared. The cardiac sounds became more obscure; the fever was more acute; the emaciation caused greater anxiety; the development of tubercles was apprehended.

During the following week the general state improved; the pneumonia of the left side was being resolved, but an exudation took place in the pleura of the same side.

17th. The effusion has diminished on the right, but it has increased on the left side; the pulse is from 120 to 124, small and irregular. There is œdema of both ankles and of the left leg; there is increasing dyspnœa and agitation. The mercurials and the preparations of iodine to be continued.

21st. The œdema of the left leg is increasing; the patient is in exactly the same state as he was when admitted, but the cachexia is much more alarming.

22nd. Paracentesis was repeated in the same point as before; a fluid of a dark red colour came away in drops; the jet could not, by any effort, be rendered continuous. The patient was laid on the edge of the bed, while the canula was left *in situ* for two full hours in order that the serosity might be collected. Scarcely twelve ounces of a turbid fluid, of a bluish red-colour, were obtained. The canula was replaced by an elastic catheter firmly fixed, and closed at its free extremity by a movable valve of pig's bladder. The flow lasted from 11 o'clock in the morning to 3 in the afternoon, and its amount may be very roughly estimated at about sixteen ounces. After the puncture the motions and sounds of the heart could be more plainly perceived; the dulness continued. The patient did not experience any relief, he was exhausted by the length of the operation; the pulse was 116, there was rigor. At 5 o'clock in the evening the catheter was removed, and the pneumonia of the left side was again discovered, attended with bronchophony, souffle, rales, and characteristic sputa.

24th. The pneumonia is being resolved; respiration is quicker; the sound is again becoming tympanitic in the left sub-clavicular region; in that situation the respiration is impetuous, and the rales less numerous, the pulse is slower.

29th. The cardiac sounds are more distinct; the effusion has remarkably diminished; gradual absorption continued to the 1st of September. At this period the pericardial frottement, which had returned, ceased. The sound is almost normal as far as the left nipple, as also in the axilla; it is quite clear in the first two intercostal spaces anteriorly. The œdema is but trifling; the cough is slight; the respiration nearly normal, nevertheless, the patient continues to emaciate.

September 4th. Diarrhœa; œdema of both lower extremities and of the face, more marked on the left side; the sound anteriorly and superiorly on that side has again become tympanitic.

11th. The pleural effusion in the left side has made enormous progress; there is absolute dulness ascending as far as the axilla; posteriorly there is intense bronchial respiration; anteriorly the respiration is impetuous and sibilant. The amount of the pericardial effusion cannot, with any accuracy, be determined. There is ana-sarca of the entire body, and ascites reaching as high as half an inch below the umbilicus; there is extreme dyspnoea, cough; the skin is cold and livid; asphyxia more and more imminent; the pulse impossible to reckon. Death occurred on the 12th.

Autopsy.—The left [right?] lung was free in the cavity of the thorax; the left was kept down by strong cellulo-fibrous adhesions; the left pleura contained eight or nine pounds, the right, five pounds, of brownish serosity. The right lung was thrown back against the spine, and was slightly compressed. The lower lobe was bluish and dry; the upper was infiltrated with a serosity, partly frothy, and partly free from air. The left lung was likewise thrown back and compressed, and had undergone similar changes, except that in it there was a tuberculous cavity, surrounded by a deposit of crude tubercles. The pericardium adhered to the ribs, from the second to the sixth, by its anterior wall. There were tuberculous ganglions in the anterior mediastinum. The pericardium was several lines in thickness; it was for the most part adherent to the heart anteriorly and posteriorly; it contained several ounces of a yellowish flaky fluid. A careful examination exhibited three layers deposited on the pericardium, of which the middle one was in a state of tubercular degeneration. The heart was large and flaccid; the dilated ventricles contained a soft blackish coagulum. There was ascites; the liver was brownish, hypertrophied, &c.

If we recapitulate the leading points of this case, we observe that the pleurisy and pericarditis, or at least the two effusions, proceed almost *pari passu* in their several phases. The inflammation of the pericardium was developed slowly and almost without acuteness; it was in its commencement unattended with violent inflammatory reaction; the symptoms increased but gradually, and at no period had they the intensity of a well-marked acute pericarditis. On the other hand, the effusion was considerable, as is the case in hydro-pericardium and hydrothorax. The intercurrent pneumonia constituted a serious but not decisive complication. Chronic œdema of the lung is so common an attendant on derangement of the circulation that we cannot be surprised either at its occurrence or its duration. Puncture did not give rise to the least immediate symptom; it afforded a little relief, but the improvement which resulted from it was not permanent, and above all it did not modify the course of the disease, which pursued its fatal course in spite of the double operation. When we observe the effects of thoracentesis, employed to relieve effusions called symptomatic, we find completely analogous phenomena and final results; the relief is not of longer duration, and the relapses are equally frequent. The intercurrent development of tubercles in the mediastinum and lung also

deserve attention. As to the mode of operation, the plan adopted, into the details of which we have not thought it necessary to enter, was neither more nor less successful than simple puncture with the trocar. The exhausting pump, on the employment of which some hope had been placed, was of no use. The liquid flowed with difficulty, and its evacuation had to be assisted. However, and this is an important modification, it was determined to allow the flow to take place gradually; a canula was so fixed as to remain for a time, and the fluid finally passed off more abundantly than when an attempt was made to procure a continuous and more rapid jet. At the time we determined to have recourse to puncture of the pericardium, we did not remember the details of Skoda's observation, and we were led to adopt the mode just now described as being likely to prove by far the most efficacious.

M. Béhier has communicated to the Medical Society of the Hospitals a case of pleurisy, hydropericardium, and puncture of the pericardium^a.

CASE V.—The patient was a woman, aged 22, admitted into hospital on the 30th January, where she died on the 28th February: she was pale, thin, and, as she stated, was affected every winter with a pleuritic effusion.

On the 31st there was considerable dyspnoea; on percussion the whole of the left side of the chest, both anteriorly and posteriorly, was found to be completely dull; there was absence of respiratory murmur; at the top of the lung some sonorous rales were heard; the right side was normally resonant, and was the seat of mucous and sonorous rales. The pulse was small, thread-like, irregular, 106; the action of the heart was tumultuous; the heart was displaced to the right.

The symptoms became more and more serious. On the 2nd of February thoracentesis was performed by M. Béhier, by means of a trocar, protected with gold-beater's skin, and introduced between the seventh and eighth ribs. This puncture not giving exit to a drop of fluid, a second was made higher up, and a little more anteriorly, in the sixth intercostal space. The trocar was introduced obliquely; a fluid, presenting all the characters of serum mixed with a little blood, flowed through the canula. It passed off slowly, not more than from eight to ten ounces were collected. The canula was moved isochronously with the arterial pulsations communicated by the heart. It was easy by means of the canula to circumscribe the heart, and to estimate its form and size. The patient experienced immediate relief. The improvement continued until the 25th of February; at that period pneumonia of the top of the right lung supervened, and proved fatal in three days.

Autopsy.—In the right pleura were found, in addition to a quantity of reddish serum, false membranes—the result of an old attack of pleurisy; the left contained a large quantity of purulent

^a Bulletin de la Société Médicale des Hôpitaux, No. 9, 1854.

serum and numerous false membranes, of more recent date. There was purulent infiltration of the lower lobe of the right lung. The left lung was reduced to the condition of a membranous leaf. The wound which had been made by the trocar in the pericardium could not be found; the false membranes adhering to the pleura prevented the possibility of tracing the course of the instrument. The pericardium contained a little more than three ounces of a yellow serum; but no false membranes were observed in it.

Dr. Béhier brought forward this case with due reserve, as it does not present characters of absolute certainty. The discussion which arose in reference to it was very short: Dr. Roger merely stated that at the time he was travelling in Germany he had seen Professor Skoda perform a puncture of the pericardium, which was attended with success.

Dr. Mérat mentions, in the "Dictionnaire des Sciences Médicales," two cases of effusion into the pericardium, treated by puncture and cured, by Dr. Remero of Barcelona; we shall content ourselves with referring the reader to this classic work. We may also, in passing, allude to Dr. Bowditch of Boston, who performed paracentesis in desperate cases of pericardial effusion, likewise with success. We do not know whether these cases, which we have sought for in vain, have been published. Finally, we think we ought not to lay stress on the remarks of a German physician, who says he observed on the shores of the Baltic an epidemic of pericarditis with dropsy of the pericardium, a great number of which cases he could have cured by puncture.

We had recently occasion to have recourse to paracentesis of the pericardium in a patient labouring under double effusion, and under circumstances in which life was threatened with immediate extinction; the operation was performed, at our request, by Professor Jobert. The case we have witnessed may with advantage be appended to those we have just quoted.

CASE VI.—Pelletier, aged 16, a packer, was admitted on the 2nd of February, 1854, into Saint Agnes' ward, in the Medical Clinique of the Hôtel-Dieu. He was a pale, weakly boy, and stated that he had never laboured under any serious illness. He had suffered for four or five days from a very acute frontal headache, which was soon followed by extreme lassitude, and pains in the precordial region.

On admission he had intense dyspnoea; the pulse was 130; the face was pale and expressive of suffering; he had some cough; on percussion there was considerable dulness in the region of the heart, ascending to the level of the second ribs, and extending from the right edge of the sternum very far into the left side of the chest, without our being able exactly to limit it in this direction; the left side of the chest was posteriorly less sonorous than the right; the pulsations of the heart were indistinct and distant; the patient did not actually faint, but felt himself at every moment as if on the verge of syncope. He was ordered a blister, and infusion of digitalis.

During the month of February the pulse continued quicker; the pulsations of the heart were at times more plainly heard, and at others became again indistinct; the dulness of the precordial region almost invariably occupied an extent of 17 centimetres (nearly $6\frac{3}{4}$ inches) in the vertical, and 18 (a little more than 7 inches) in the transverse direction; for two days only (from the 18th to the 20th) did it seem to diminish; during this time a cardiac frottement particularly audible at the base of the heart, was perceived; the vaulting of the precordial region became more and more marked on the left side of the chest; the signs of pleural effusion were progressively more manifest; posteriorly there was ægophony below the scapula; there was bruit de soufflet.

March 17. During the last week the vaulting has increased, a copious diarrhœa has come on; the patient is growing weaker, and is emaciating; he cannot change his position in the bed, and the least motion brings on syncope; the face presents a livid paleness; the oppression has increased to the last degree; the respiration is short and sighing; percussion of the precordial region, and even the mere application of the hand, causes pain and suffering; the pulse is small, wretched, 120; the dulness has risen to the level of the clavicle.

18th. The symptoms had become still more serious; death was imminent; we decided on the immediate performance of puncture of the pericardium. M. Jobert (de Lamballe) made an incision in the fifth intercostal space, at about 3 centimetres (1.18 inch) from the left edge of the sternum; this incision included the skin and areolar tissue, down to the intercostal muscles; he then introduced a trocar covered with gold-beater's skin by a steady and continuous movement, obliquely from within outwards; the stilet being withdrawn, a few drops of brownish serum flowed through the canula; the latter, left free in the wound, was moved by the pulsations of the heart, and rose at each contraction.

During the operation, the patient, who had requested it, but was alarmed at the preparations, became paler, and moaned; the pulse was very slow, and almost imperceptible, but it soon recovered its usual strength and frequency; there was no other uneasiness, nor was there great oppression, nor syncope.

The fluid at first flowed freely, though not in a jet; about two ounces were collected; the discharge became slower; the canula was fixed in the wound; without exciting the evacuation by any manœuvre, the serum continued to ooze away. The operation was performed at 9 o'clock in the morning; at half-past 9 the patient stated that he felt neither relief nor increase of oppression; at half-past 10 the canula was withdrawn; about thirteen ounces of fluid had passed off; towards noon the patient felt a little better; at evening visit the relief was found to be considerable; the patient breathed tranquilly; the pulse was full, 134; the dulness did not reach higher than four fingers' breadth below the clavicle, it did not pass the middle of the sternum by more than two centimetres (rather

more than three-fourths of an inch) towards the right side; on the left it extended to a vertical line, drawn from the anterior edge of the axilla; the pulsations of the heart were much more distinct, and the apex of that organ had perceptibly risen.

20th. The improvement continued; there was increased, almost tympanitic, resonance anteriorly at the top of the left lung; the respiratory murmur was audible from the clavicle to the fourth rib, where the dulness commenced; the cardiac sounds were becoming more and more distinct; posteriorly on the left side there was dulness, souffle, ægophony; there was a little cough, scarcely any oppression; the fever was slight.

22nd. The pleuritic effusion was progressing; the heart was displaced towards the right; there was considerable enlargement of the left side, the patient could only lie on the right, and complained of a very painful spot in the side.

The pleuritic effusion continued to augment until the end of the month; the fever increased; the cough became more frequent, and was accompanied by the expectoration of thick, white sputa; there were some mucous rales at the top of the left lung; the oppression was more decided, but was still much less than it had been before the puncture was made; there was diarrhoea, which was kept in check with preparations of nitrate of silver.

30th. Having to deal with a dropsy occupying the whole of the left pleura in a patient already exhausted by the disease, we did not hesitate to perform thoracentesis. A first puncture, made in the sixth intercostal space, or on a level with the axilla, did not give exit to a single drop of fluid; the trocar was stopped by a very resistant false membrane. A second puncture, made a little more posteriorly and lower down, allowed about a pint of fluid to escape; the operation was not followed by anything particular, nor did it give rise to any unpleasant symptoms.

April 2nd. There were some sub-crepitant rales in the lower portion of the left lung; there was neither souffle nor ægophony; the diarrhoea continued; there was want of sleep; there was no appreciable difficulty of breathing.

From the beginning of April to the 28th of May, the day on which the patient left the hospital, there was no return of the pleuritic or pericarditic effusion; the pulsations of the heart were perceptible to the hand; the sounds were audible, unmixed with souffle or frottement; the dulness still continued somewhat more extensive than in the normal state; the vaulting had completely disappeared; the respiration was pretty free; the patient did not complain of dyspnœa; he sat up in his bed, amused himself, had a good appetite, and declared himself very happy in his altered condition.

Still, his general state was far from satisfactory: the cough became more frequent; the fever returned, particularly towards evening; the diarrhoea was checked, but not wholly removed, and in spite of the use of tonic medicines and nourishing diet, his strength did not return.

He grew weary of the hospital; he attributed to his stay in it the slowness of his recovery, and demanded his dismissal; the signs of tuberculization, which during the last month had become more evident, were, at the time of his leaving, not to be mistaken. He then presented the following symptoms: at the top of the left lung anteriorly, dulness, sibilant rales, gargouillement on forced inspiration, no souffle; posteriorly, sub-crepitant rales at the summit, mucous rales in the lower parts of the lungs; on the right, puerile respiration anteriorly; posteriorly, blowing respiration, resonance of the voice, dry sonorous rales; the pulsations of the heart were strong and distinct, 160 in the minute; there were repeated fits of coughing without characteristic expectoration; dyspnoea; constant diarrhoea; emaciation; hippocratic deformity of the fingers.

The patient, notwithstanding his state of weakness, was able to bear the journey in a carriage to the department of Eure-et-Loir, where his family resides. Since that time, with the exception of an account received during the first fortnight in June, we have not heard of him, he was then in the same state as when in hospital: we do not know what became of him.

From the foregoing cases some inferences may be deduced, which we shall content ourselves with briefly laying before the reader; the facts we have brought forward are of a nature to yield their own instruction, and have no need of commentary. As to the operation itself, and its supposed dangers, it has now been demonstrated, we think, that paracentesis of the pericardium is not attended with any of the imaginary perils from which experimentalists have for so long shrunk. Thoracentesis might more justly be dreaded, and is more liable to give rise to consecutive dangers.

The puncture ought to be made at the point indicated and chosen by the authors; the perforation of the sternum is, at least, useless; puncture between the fourth and fifth ribs is sufficient, and there is no advantage in having recourse to the trepan.

The operation may be performed by direct puncture or by incision, or by the mixed proceeding of previously dividing the superficial layers, and subsequently puncturing the subjacent part with the trocar. Our experience is not sufficient to assign a rank to each of these several modes, which have been adopted with equal success.

The canula having been once introduced into the pericardium, the discharge of fluid takes place gradually; it is useless to try the various manœuvres which have been recommended for hastening its evacuation. The best plan consists in allowing the canula to remain until the discharge spontaneously stops, and then closing the wound with a piece of diachylon kept in its place by means of a bandage round the body. The wound does not require any treatment, it is attended with scarcely any pain, does not give rise to any acute inflammatory reaction, and has not, in any case, induced even slight suppuration.

The instruments used for thoracentesis answer better than any

others. The employment of exhausting pumps is useless, and inconveniently complicate the apparatus; however, although the value of gold-beater's skin, such as we use in thoracentesis, appears in this instance to be of doubtful value, there is no objection to furnishing the free extremity of the canula with it.

As to the therapeutic value of the operation, paracentesis of the pericardium is evidently indicated only in cases in which the abundance of the effusion threatens life; the occasions for recurring to it will always be rare, and moreover it can, in most instances, remove the presence of only one of the symptoms. Simple idiopathic hydro-pericardium, uncomplicated with other dropsies, or with serious lesions of the thoracic organs, is certainly a rare exception; most frequently the abundant effusion into the pericardium is but one of the expressions of a state of disease which is not localized in this one spot, but attacks other essential parts of the economy. To evacuate the fluid is to relieve the patient without curing the disease. Were it only available in this point of view, paracentesis of the pericardium ought still to figure in the category of operations which it is important to preserve and to sanction. When we witness the anxiety which results from the pressure of fluids on the heart; when we are present at that long and terrible agony; we will feel but too happy to be able to remove the intensity of the suffering, and to prolong an existence we have first rendered less painful — *Archives Générales de Médecine*, November, 1854, p. 513.

[We have reproduced at length this most valuable contribution to medical science, as it gives a complete history of a very doubtful therapeutic measure, the advantage, or even propriety, of adopting which has been deservedly disputed. The results of the cases cited, in our opinion, set at rest the question for ever; and we cannot agree with the author in thinking that, even in the rare exceptions he refers to in the concluding paragraph, it would be at all justifiable to have recourse to it.—ED.]

On the Indications of Tracheotomy derived from the presence of Foreign Bodies in the Air-tubes. By M. CHASSAINAC.

TRACHEOTOMY is indicated whenever there is imminent danger of suffocation, produced by a material obstacle to the passage of air through the trachea.

Two classes of causes may give rise to this result: on the one hand, foreign bodies; on the other, a numerous series of affections which necessitate the establishment of an artificial channel for the introduction of air into the lungs.

First of all, I shall say a word as to the suitable moment for the performance of the operation. First, in cases in which there is absolute certainty of the existence of a foreign body in the trachea, the rule is to operate instantly, if the other means we possess of producing the expulsion of such a body have proved inefficient; taking care not to leave the patient, should there be unavoidable

delay in commencing the operation. Secondly, in every other case than that of the presence of a foreign body, it is the degree of asphyxia of the individual which must direct us as to the rapidity with which we should act.

Why this urgency for operation in the case of foreign bodies? Experience has shown that every individual who has a foreign body in the trachea is exposed to the danger of immediate suffocation, even when there may at the present moment exist no serious symptom, no very manifest impediment to respiration. But this individual—who just now appears so calm, whom you should be tempted to leave to himself until some new occurrence should arise to force you, as it were, to action—this individual may, all on a sudden, in a fit of coughing, and by a simple displacement of the foreign body, be attacked with an imminent asphyxia before you should have time to reach him. I am aware that an indefinite temporization has been advocated. This system owes its adoption to a very learned work of M. Mondière of Loudun, who has collected a certain number of cases of individuals having foreign bodies in their air-passages, and who, not having been operated on, have notwithstanding survived and completely recovered, after having for a greater or less number of years retained the bodies in question. But, in the first place, these facts have reference to the, in some degree, chronic side of the question. They by no means prove that what I affirm does not exist; that is to say, the imminent danger of fatal suffocation. In the investigation of facts analogous to those mentioned by M. Mondière, the cases of death have been passed over, and they are numerous, which occur in the first periods after the introduction of foreign bodies into the air-passages. Thus, an argumentation based upon facts of this nature can lead to no conclusion with respect to what we may call the acute state.

Now I say, that even with regard to their chronicity, the facts quoted by M. Mondière do not establish the expediency of surgical non-interference; and it is sufficient to read with some attention the otherwise very curious observations he brings forward, to see that it is only through numberless accidents, which have long placed their lives in peril, that the sufferers have succeeded in reaching a spontaneous cure. Thus my assertion continues absolute on this point: from the moment a foreign body is in the trachea and a surgeon is summoned, he ought forthwith, by some means or other, to effect its removal; or if he is unwilling to resort immediately to tracheotomy, he ought to remain uninterruptedly with the patient, as he would otherwise leave him in danger of death.

It is not my intention to specify in this place the numerous varieties of foreign bodies which may penetrate into the air-passages. This enumeration, which we have in all standard works, would here be superfluous. I shall merely mention, among the divisions which might be established, that which seems capable of giving rise to practical indications: I mean the division of foreign

bodies into soluble and fixed. It is evident, in fact, that when a rapidly soluble foreign body has got into the air-tube, the surgeon may abstain from performing tracheotomy; on condition, however, that he does not leave his patient, and that he be prepared to act in case the solution of the body being delayed, suffocation should become imminent and seriously endanger life.

I shall, however, remark, that where the foreign body, consisting of a substance analogous to a pin or nail, should be perceptible through the trachea and integuments, we might dispense with tracheotomy, cut down directly on the body in question, and extract it by seizing it by one of its extremities.

In this question of foreign bodies, three points alone interest the practitioner:—Is there a foreign body in the air-passages? Ought it to be extracted? By what kind of operation ought it to be extracted?

It is often very difficult to attain to absolute certainty as to the existence of a foreign body in the air-passages. The history of the case, which is capable of furnishing valuable information on this subject, cannot always be obtained; and, on the other hand, the causes of symptoms analogous to those which the presence of a foreign body in the air-passages may produce, especially in children, are sufficiently common to give rise to serious doubts. It will, therefore, be useful to recapitulate the circumstances calculated to elucidate this part of the diagnosis. These are, first, convulsive and jerking fits of coughing; secondly, a fixed pain, which the patient refers to the part of the air-passages in which the foreign body is situated; thirdly, the tremor (*grelottement*) perceptible to the ear and to the hand, a sign on which Dupuytren has laid much stress; fourthly, the existence of a deep, dull, and general pain; fifthly, impeded respiration in one side of the chest; sixthly, in fine, diminution, or even complete cessation, of vesicular murmur in the same side, coincidently with persistence of normal resonance on percussion.

From the combination of these signs we may ascertain, if not always, at least in a certain number of cases, not only that a foreign body is present in the air-passages, but we may also determine its exact situation.

Ought the foreign body to be extracted? I have already sufficiently dwelt on the consideration of this question.

By what kind of operation will it be advisable to extract the foreign body? The opinion I hold on this point differs so much from what has hitherto been taught, that I shall be obliged to enter into some details.

I begin by laying down that in all cases, and whatever may be the present situation of the foreign body, tracheotomy must immediately be had recourse to. On this point there could not be the shadow of a doubt in those cases in which the foreign body exists in the trachea or bronchial tubes. For the idea of withdrawing through an opening in the larynx bodies so situated can have occur-

red only to surgeons who have never sufficiently reflected on the anatomical construction of the parts, or on the difficulties of the operative manipulation. But if, as we have had instances, the foreign body should be fixed in the larynx, whether above or below the glottis, or even in the ventricles, would not one or other species of laryngotomy be fairly indicated? Such is not my opinion; and I think that it is even then to tracheotomy that we must have recourse. In the first place, we must bear in mind that during an operation such as consists in extracting a foreign body contained in the larynx, numerous causes of suffocation may arise: the flow of blood, or even the falling into the trachea of the body we wish to withdraw from the larynx.

I say, then, that we must above all provide for the security of the respiration; and this can be done only by having a tracheal opening admitting, if necessary, of the introduction of a canula, that the surgeon may give all his attention to the delicate operation he has to perform on the larynx. On the other hand, we should observe that through the opening formed in tracheotomy we may completely remove from below upwards certain foreign bodies arrested in the larynx, or repel them into the pharynx or the cavity of the mouth.

Thus I say, that we must in all cases adopt tracheotomy: first, because if the foreign body occupies the trachea or bronchi, it is the only operation that can be entertained; secondly, because in the case of foreign bodies in the larynx, it is better adapted than laryngotomy to attain our object; thirdly, in fine, because in cases in which the absolute necessity of acting directly on the larynx may have been recognised, the tracheal opening plays the part of a safety-valve, calculated to protect the life of the patient during the course of a delicate and difficult operation, the execution of which is facilitated by preliminary tracheotomy.

Foreign bodies retained in the pharynx, and especially in the œsophagus, may become a cause of asphyxia so imminent, that if it should be impossible to extract them instantly we must have recourse to tracheotomy to fulfil the most urgent indication. In this we follow the example of Habicot, who opened the air-passages in a young man threatened with suffocation in consequence of having swallowed some pieces of gold enclosed in a linen cloth.—*Moniteur des Hôpitaux*, 6 March, 1855, p. 223.

On the Composition and Action of the Gastric Juice. By MM. O.
DE GRUNEWALD and DE SCHROEDER.

NOTWITHSTANDING the numerous investigations to which the gastric juice has already been subjected, the observations made by Drs. Grunewald and Schroeder on a woman affected with fistula of the stomach will be read with interest. This woman, aged 35, and enjoying good general health, weighed 53 kilogrammes [nearly 117 lbs. avoirdupois], and was suckling an infant at the time she was

under observation. The fistula, which was of two or three years' standing, had doubtless been produced by a perforating ulcer of the stomach. The quantity of gastric juice secreted was estimated, exclusively of the saliva,—65 grammes [a little more than two ounces] per hour,—at 584 grammes in the hour, or 14.016 kilograms [nearly 31 pounds] daily. This enormous proportion is much greater than that given by Bidder and Schmidt^a—6.4 kilogrammes [a little more than 14 lbs.] each day. The smallest quantity was collected in the morning, fasting; however, it was never less than from 40 [?] to 400 grammes [about 13 ounces] in the hour. The fluid then obtained was in general clear, serous, and colourless; at other times it was more viscid, it sometimes contained bile, without any sign of functional derangement being present. Sarcinæ were, with the aid of the microscope, pretty often observed.

As to the chemical constitution of the juice, which was investigated by Dr. Schmidt, the fluid obtained early in the morning, while the woman was fasting, was either neutral or slightly alkaline; after food was taken it was always acid. No hydrochloric acid was found in the analysis of several portions of gastric juice collected at different periods of the day; the presence of butyric and lactic acids is more probable. The following is a resumé of these analyses. In 1000 parts he found, water, 956.595; solids, 43.405;—the latter consisted of organic matter, 36.603; inorganic, 6.802;—the inorganic contained chloride of sodium, 4.633; phosphate of lime, 0.961; of magnesia, 0.260; phosphate of iron, 0.006; potash belonging to the organic substances, 0.363.

The organic substances consisted of coagulable albuminous matter (pepsin), sugar, butyric acid, uncoagulable protein substances, and lactic acid. The organic acids are not considered as primarily present in the gastric secretion, even as products of the ingested aliments; they vary in quantity according to the quality of the nourishment. Hydrochloric acid, on the contrary, has been regarded as an essential compound, although the analyses do not exhibit it, doubtless because it is easily neutralized by the alkalies of the saliva.

In one analysis Schmidt found free hydrochloric acid, but only in the proportion of two parts in 1000, a ratio ten times less than in the dog. As to the question whether the gastric juice prevents the saliva converting starch into sugar, as Bidder and Schmidt assert, the authors found that the action of the saliva was not destroyed; they however confirm the observation of those chemists that sugar is not to be found in the stomach of the dog, even after the ingestion of boiled starch.

The digestion of protein aliments was examined by introducing into the stomach through the fistula a certain weight of coagulated albumen, meat, &c., enclosed in thin linen bags; the loss of substance of the particles during a given space of time was thus observed as well as the changes which took place in the microscopic

^a Die Verdauungssäfte und der Stoffwechsel: Mitau und Leipzig, 1852. p. 36.

structure of the elements. It was thus found that for protein substances the solvent power of the human gastric juice is far inferior to that of the dog. Solution is perfected in the stomach of the dog in from two to four hours, while in that of man it requires nineteen or twenty hours. Raw meat is better digested by the human stomach than dressed meat, and veal than beef.

As to the microscopic alterations, the primary fasciculi were found after an hour and a half, easily separable from one another, without having themselves undergone any change, the sarcolemma was destroyed. After two hours and three-quarters, the primary bundles began to show transverse fissures; after three hours, only striated lamellæ were seen transversely; after three hours and a half, besides quadrilateral lamellæ, there were some primary fasciculi, longitudinally and transversely fissured, frequently denticulated at their extremities; after three hours and three quarters the primary fasciculi were two or three times longitudinally divided. After four hours and a half there was scarcely any solid residue in the stomach, with the exception of a small number of primary bundles, much fissured both longitudinally and transversely, but still exhibiting the transverse striæ. At the end of three hours and a half, or four hours, the stomach was in general empty; the protein substances were then submitted to the influence of the intestinal secretion. As to the digestion of fat, the membrane of the cells is dissolved in the stomach, but the fat itself does not undergo any alteration. Milk, after three-quarters of an hour, formed a thick coagulum, enclosing a large quantity of milk globules and of free fat. At the end of two and a half hours the casein was observed in part as an amorphous substance, in part as membranous and transparent fragments, with some unaltered milk globules; at the end of three hours and three quarters scarcely any remained in the stomach.

These changes, which in the stomach of this woman required three hours and three-quarters, or four hours and a half, were completed in the stomach of a dog in two hours.—(*Succi gastrici humani indoles physica et chemica*, Otto de Grunewald; *Succi gastrici humani vis digestiva*, E. de Schroeder; *Dissert.*, Dorpat, 1853.)—*Archives Générales de Médecine*, February, 1855, p. 196.

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